

MIDWEST ENGINEER



Highway Development — Civic Responsibilities — Conference Technique

VOL. 1

DECEMBER, 1948

NO. 4

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MIDWEST ENGINEER

A Publication of the Western Society of Engineers
84 E. Randolph St. :: Chicago 1, Illinois

The Western Society of Engineers in "serving the engineering profession" is making available to the E.S.P.S. a portion of this publication which will display descriptions of POSITIONS AVAILABLE in the Chicago area and the qualifications of engineers in a MEN AVAILABLE column. Members of the W.S.E. may publish their qualifications at no cost. These advertisements, limited to 35 words and including a typed resume of experience, should be sent to E.S.P.S.

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WESTERN SOCIETY OF ENGINEERS
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AMERICAN SOCIETY OF MECHANICAL ENGINEERS
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AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS

Telephone ST ate 2-2748

84 East Randolph Street

Chicago 1, Illinois

MIDWEST ENGINEER

Published Monthly
except June, July, August by
THE WESTERN
SOCIETY OF ENGINEERS
at
2207 Dodge Avenue
Evanston, Illinois

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Production Supervisor

GENERAL AND EDITORIAL OFFICES
84 E. RANDOLPH STREET
CHICAGO 1, ILLINOIS
TELEPHONE: RANDOLPH 6-1736

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Single copy\$.35
Annual subscription 3.00
Foreign postage 1.00
(Additional, per year)

Entered as second-class matter September 23,
1948 at the post office at Evanston, Illinois
under the Act of March 3, 1879.

MIDWEST ENGINEER

A Publication of

THE WESTERN SOCIETY OF ENGINEERS

Serving the Engineering Profession



December 1, 1948

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COVER CREDIT

A turn in "Biggest Inch" pipe line constructed by The H. C. Price Company of Bartlesville, Okla., for the Southern California and Southern Counties Gas Companies. This is the world's first 30-inch high pressure pipe line. It is part of the Texas-California pipe line which will deliver 305 million cubic feet of gas daily to Southern California. (Photograph courtesy The Lincoln Electric Company, Cleveland, O.)

COMING IN THE JANUARY ISSUE:

TELEVISION'S FUTURE

SOIL SOLIDIFICATION

FOOD PACKAGING METHODS

Holiday Greetings

As we approach the 1948 Christmas holidays, Western Society is well into its program for the Engineering and Science Center launched over two years ago.

Our new headquarters will be a full reality in a few short weeks and many important changes have been made to meet the challenge of responsibilities to Chicago and the Engineering Profession.

The Board of Direction, officers and staff of Western Society join in wishing all of our members and our many friends—

A Merry Christmas and Happy New Year.

VERNE O. MCCLURG
President

HIGHWAY DEVELOPMENT

Arthur C. Butler

Director, National Highway Users Conference

For years the National Highway Users Conference, and the state and national associations affiliated with it, have urged state highway departments to publish the findings of the state-wide planning surveys and to prepare long-range plans of future road improvement. This is regarded as a sure-footed approach to better roads for our car-traveling nation.

The highway planning surveys were conducted by all state highway departments under the supervision of U. S. Public Roads Administration. They were started in 1935 and were intended to be kept continuously up to date. The surveys consisted of a complete inven-

tory of all public roadways, traffic counts and a financial survey.

Early Highway Planning

There was some progress in getting the survey data and state highway plans published before the war ended. In 1940 Kentucky and Ohio published a digest of the highway planning survey in laymen's language. Vermont, Massachusetts, New York and other states issued reports on highway needs which contained long-term building plans.

In 1943, Wisconsin created the Legislative Interim Committee on Highways which reported road needs of the state

system and submitted a plan for removing the deficiencies. The Wisconsin Committee was similar to the Illi-



Arthur C. Butler

nois Commission on Future Road Program of 1933 and the Indiana Highway Study Commission of 1937 both of which recommended road development policies, but did not have all the facts at hand because the planning surveys had not then been finished.

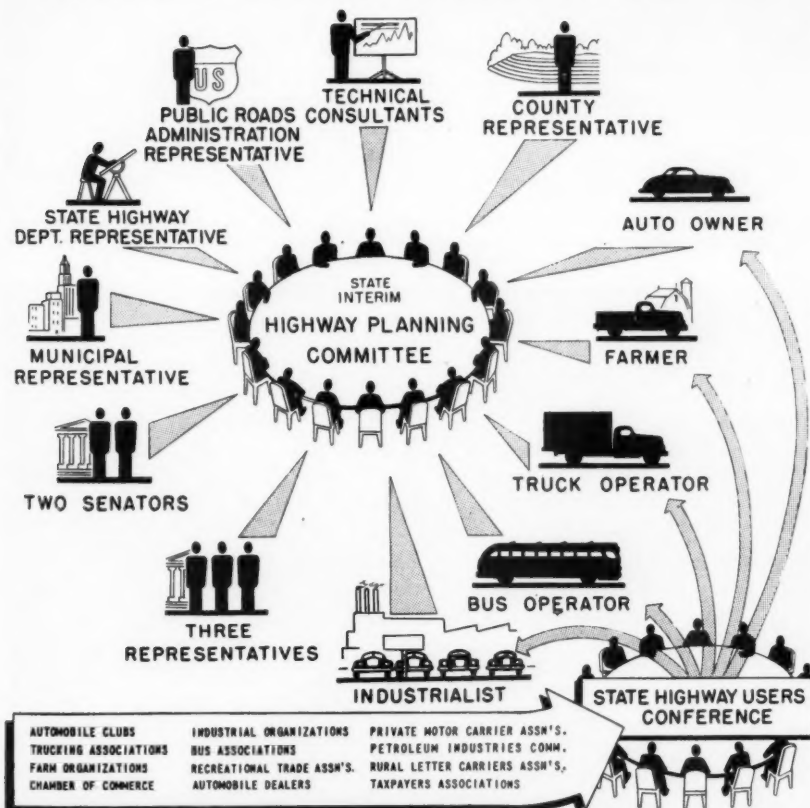
State Highway Study Committees

After the war it became apparent that a complete factual analysis of all road and street systems was needed in the states, and legislative interim highway study committees or commissions were found to be the best method of getting all the facts from the state, county, local and municipal highway officials. The study committees are able to prepare a comprehensive long-range plan for all road systems in the state, based upon needs as revealed by the planning survey data.

Our policies state that a properly constituted state highway study committee should contain representatives of the State Senate, House of Representatives, State Highway Department, county and local road departments, muni-

(Continued on Page 4)

ACTION FOR STATE HIGHWAY PLANNING



This is the model state highway study committee recommended by N.H.U.C. because it includes highway users and all other groups interested in highway planning.

Programmed Progress for Highway Development

(Continued from Page 3)

pal street systems and several representatives of organized highway users, such as the motor club, truck association, farm organizations, etc. By thus having all groups interested in highway transportation on the official planning body, from the beginning, the plan produced should be fair to all and would therefore be easier to enact into law. Cooperation of the division engineer of Public Roads Administration is assured in all such projects, and usually a consulting engineer is retained to manage the investigation.

Postwar Planning

In California in 1946 the Collier Highway Planning Committee of the state legislature submitted a report showing highway needs of the next twenty years. Two separate reports on taxation and financing of the program were written. The legislature enacted only part of the tax increases recommended. Motor vehicle taxpayers had not been an official part of the committee.

The Michigan Highway Study Committee — created by Michigan Good Roads Federation and containing representatives of state, county and municipal highways and the automobile club, road builders association and trucking industry — reported highway needs of Michigan in February, 1948.

The report showed that \$51,000,000 of additional revenue was needed annually to bring all roads and streets up to the standard agreed upon by the committee, but made no specific recommendations as to how the new money should be raised. The committee later recommended increases in registration fees and gasoline tax and local support for local roads, but Governor Sigler, being against new taxes, has not yet allowed these subjects to be considered in special sessions of the legislature. The whole matter will be before the 1949 regular session.

In addition to the tax increases, the Michigan committee recommended reclassification of highways, redistribution of revenue and several reforms and improvements in highway administra-



Typical secondary or farm-to-market road of very light traffic. Gravel surfacing gives all-weather dependability to the few farmers using it.



Typical old state primary highway. Pavement 18 to 20 feet wide not considered adequate for modern traffic. Sight distances too short. Planning survey might list this road for widening and straightening.



Four lanes divided by a central grass plot are recommended for highways carrying over 5,000 vehicles per day. These modern pavements are 22 feet wide.

tion. These proposals plus the recommendation that local governments support local roads and streets are strongly favored by Michigan highway user groups. The Michigan committee had a highway users advisory subcommittee, but it did not function until after the highway needs report was released.

During 1947 several state legislatures created interim committees on highway planning, including Illinois, Iowa, Kansas, Minnesota, Nebraska, Oregon, South Dakota and Washington. The Illinois and Kansas committees are the only ones that include spokesmen for organized highway users in their membership.

The Illinois Commission

The Illinois Highway and Traffic Problems Commission contains five senators, five representatives and five citizens representing agriculture, labor, townships, business and the motorists. Its chairman is Lieutenant Governor Hugh W. Cross, and J. J. Cavanagh, Manager, Chicago Motor Club, is its secretary. The commission must submit its recommendations to the General Assembly by March, 1949, according to law.

After receiving replies from a majority of county, township and municipal road and street officials it has been tentatively estimated that it will cost \$2,157,000,000 to improve all Illinois road systems to the standards set by American Association of State Highway Officials. Milo P. Flickinger, Secretary, Associated General Contractors of Illinois, estimates that by the time all street needs are catalogued the total figure will reach three billion dollars.

Spokesmen for highway contractors and road and street officials have been quite vocal in showing need for much additional tax revenue for road building. Representatives of highway users have demanded that before tax increases are proposed, the commission should prove the need for more revenue, and prepare a long-range road development plan that would show how the future highway taxes would be spent.

Motor vehicle groups are urging reforms in highway administration as well as elimination of fiscal abuses to secure maximum economical expenditure of the highway dollar, including reclassification of road systems, a priority schedule of highway building projects, and a new formula for distributing road money. They are also insisting

that all beneficiaries of roads and streets pay their proper share of tax burden, and are proposing several ways of increasing highway revenue without increasing motor vehicle taxes.

Chester G. Moore, Chairman, Central Motor Freight Association and President, Illinois Bus Association, told the Illinois commission that strictly local streets and land service roads should be financed by local or general taxes and not by state highway funds. He urged that revenue from motor carrier fees and motor fuel taxes be expended largely on the systems of roads which produce the bulk of that revenue; namely, primary inter-city highways and urban arterial routes.

Mr. Moore recommended several methods of enlarging Illinois highway funds, other than by tax increases, including:

1. Reimburse highway funds gradually by annual appropriations from the state general fund until the \$89,000,000 of past diversions to relief bonds will have been returned.
2. Allocate to highways the revenues paid by automobile and petroleum businesses to the retailers' occupation (sales) tax.

"This part of the sales tax would have contributed \$20,789,928 to highways in 1947," Moore said.

A list of priority road needs kept five years in advance was urged, by C. W. Coons of Peoria, Chairman, Illinois Highway Users Conference and Manager, Illinois Automobile Trades Association.

He pointed to the constant shifting of the burden of local road costs from local tax sources to highway users' taxes.

"In 1921, three-fourths of the money spent on highways came from local taxes, while in 1941, only one-fourth of highway expenditures were from local sources," Mr. Coons said.

Because all roads benefit all citizens in varying degrees, Mr. Coons told the commission that Illinois should arrive at a proper formula for dividing highway costs among the various groups benefiting from road improvement similar to the formula which Joseph B. Eastman, Federal Coordinator of Transportation, recommended in his national study entitled, "Public Aids to Transportation". This study showed that primary highways should be financed 83

per cent from highway user taxes, and 17 per cent from general taxes; county and local roads 34 per cent from highway user taxes, and 66 per cent from general or local taxes; city streets 30 per cent from highway user taxes, and 70 per cent from general or local taxes.

Other automotive people have urged the commission to keep its highway development plan within the taxpayers' ability and willingness to pay, and have requested that a taxpayers or highway users committee be established within the commission. Many have asked that diversion and dispersion of road funds be ended, and that township road districts be consolidated into larger administrative units, such as counties.

Ohio Highway Study Committee

The Ohio Postwar Program Commission recently created a Highway Study Committee of 32 members, 10 of whom are highway users or automotive taxpayers. This latest committee has a good opportunity to prepare a program of highway progress suitable to all groups.

Guideposts to Better Highways

The 1949 legislatures in dozens of states are expected to introduce bills to create similar highway planning committees. After having experienced the above results from the earlier committees, highway users have agreed upon nine basic principles and procedures for attaining programmed progress in highway development.

The Highway Transportation Congress which National Highway Users Conference conducted in May was attended by state and national highway user association leaders from 40 states. That meeting recommended, and later our Board of Governors approved, the "Nine Guideposts to Better Highways", as follows:

1. Each state should have for its guidance a sound, long-range highway program—the product of an official highway study committee created and implemented by legislative action.
 2. Such committee should be composed of duly designated members of the Legislature and should include, from the beginning, organized highway user representation both rural and urban and such other official and public elements as may be directly concerned in
- (Continued on Page 6)

Programmed Progress for Highway Development

(Continued from Page 5)

developing a long-range plan covering state, county and local roads and streets.

3. The long-range highway program should be based on a sound and realistic approach, balancing actual and reasonably anticipated needs with ability and willingness of the taxpayer to pay the cost. In the evaluation of needs the committee should consider reasonable standards rather than desired ideals and all plans for improvements should be in accordance with sound engineering and fiscal practices.
4. The study should review the existing classification of road systems to insure that all roads are properly grouped in accordance with the traffic and benefits rendered. The administrative responsibility for the several systems should correspond with these classifications. The agencies charged with this responsibility should be so organized as to operate with maximum efficiency and economy.
5. The study should analyze existing highway administrative and financial practices and recommend remedial action where necessary. Such action should provide for the elimination of any financial abuses, such as diversion of highway funds to other purposes, and dispersion of such funds.
6. The committee should determine the equitable allocation of costs of such long-range program among highway users and other beneficiaries. It should also ascertain the number of years that will be required to carry forward such a program to completion on the basis of estimated total net available resources and revenues at existing rates of taxation. Correction of existing abuses, whether administrative or financial, is a fundamental prerequisite to any sound program.
7. It is, of course, physically impossible to satisfy all road needs simultaneously. In order to assure

Engineer Recommends

SCENIC MEMORIAL HIGHWAYS

Memorial highways are among the finest tributes a city, county, or state can pay its hero dead, Charles M. Upham, engineer-director of the American Road Builders' Association, stated on the 30th anniversary of Armistice Day.

"Many communities, counties, and states have been considering a suitable memorial for their neighbors and friends who died in the last war," Mr. Upham said. "No memorial can be more lasting, beautiful or useful than a well-constructed memorial highway."

One of the most famous memorial highways in this country is the Mt. Vernon highway from Washington, D. C., to Mt. Vernon, Va., which honors the memory of our first president.

orderly development of the highway system in accordance with needs, a priority schedule should be established. This scheduling of improvements should be set up for the life of the program but should be subject to re-examination at reasonable intervals in order to keep abreast with changing needs and conditions. Timing of the program should consider the current availability of materials, equipment and personnel so as not to contribute to an inflationary spiraling of prices.

8. The committee should afford opportunity for presentation of views by the public at convenient places. Any reports of the committee contemplating legislative action should be made public at least ninety days prior to submission to the Legislature. The supporting detailed data, including the designation and description of planned road improvement, should be published at the same time and made readily available to the public.
9. It is recommended that highway study committees should devote more attention to the study of highway needs as they relate to future trends in motor vehicle sizes and weights and should give more consideration to the full utilization of our existing highways.

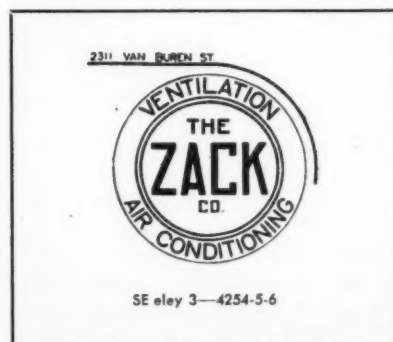
"Mt. Vernon memorial highway typifies what a good memorial highway can be," Mr. Upham declared. "It should be built in a scenic part of the country with provision for bordering shade trees, many parks and wayside observation points. Enough land should be acquired on both sides of the highway to protect it permanently.

"The road should be located in a way to take advantage of the existing ground surfaces, and all cuts and fills seeded or planted as soon after construction as the season will permit. Of course, billboards should not obstruct the memorial highway, and all bridges and grade separation structures should be in keeping with it."

Such highways need not be confined to the country, the ARBA official pointed out. "New urban streets and boulevards may be designed as memorial highways. Such streets should pass through a park or fine residential area of the community, and be designed as approaches to a city square, civic center, or stadium. Like its country cousin, the rural memorial highway, the city street should be lined with many tall shade trees and made as attractive as possible," Mr. Upham recommended.

He said he believes that the nation could have hundreds of such fine roads if the people want them, and if highway engineers and landscape architects work together to make the highway and surroundings blend together.

"A memorial highway is indeed a memorial to the dead and a source of pleasure to the citizens of the community, county, or state that builds it," Mr. Upham held.



Good Roads Are Our Business!

Taylor G. Soper
Executive Secretary
Illinois Road Builders Association

Roads are our business! The actual construction of roads and streets is all-important, but so is the proper application of the millions of dollars paid by the motorists each year in the form of gasoline taxes. Everywhere today, motorists and highway engineers alike are crying loudly that our highway system is "obsolete and inadequate". Each year we find another state or two or three carrying out the wishes of the driving public in adopting amendments to their State constitutions outlawing diversion. Illinois has not yet joined this select group.

The motorist wants and needs better and safer roads and the road builder has the knowledge and skill to build them, but good roads cost money — a lot more money per mile today than ever before. In spite of construction costs being higher, it is not paradoxical to say that "the motorist is getting his money's worth".

In Illinois, the cost of a mile of paved road in 1948 is approximately \$104,000. In 1935, that cost would have been around \$49,000. How come? The reasons are quite simple.

Higher wages are being paid to road construction workers; almost every material used in building a road has risen in cost, and freight rates have increased to add to the higher cost. There are many improvements in road design in the way of wider pavements, more even grades and longer sight distances that have naturally added to the costs. These added costs have consumed much of our road tax dollar, and while our gasoline tax has remained constant for many years, highway costs have not — with the result that we can build less than half the road mileage that we could in 1935.

On the credit side, however, are the great hidden savings of lives, times, longer use and much better driving conditions in the highways built in 1948 — even though the cost was greater.

An analysis of the labor factor discloses that in 1935, fourteen thousand man hours of labor were needed per mile of highway at an average hourly wage of seventy-one cents. This com-

pares to eighteen thousand man hours in 1948 at an average hourly wage of \$1.50. The wage increases have naturally followed the "cost of living" increases in other labor fields. In thirteen years, wages have doubled and tripled in various areas throughout the State. The increased wages, when added to the total cost of a mile of 1948 highway, constitute a large figure.

We have seen highway construction equipment greatly improved. No longer are mules used to cart earth dumped from elevating scrapers. Under the old system, small steam shovels were used to move the dirt. Concrete mixers were of 29.7 cubic feet capacity. Men worked in the "puddle" laying and spreading the concrete.

But in 1948, it is not unusual to see earth moved with giant scrapers of from fifteen to twenty-five tons. Huge trucks now carry the dirt away with the aid of much larger steam shovels. Tournapulls move twenty-six tons of earth at a speed of from 20 to 30 miles an hour. Concrete mixers now have capacities of seventy-three cubic feet. Concrete spreaders, which roll on forms laid along the side, do the work formerly required of several men working in the "puddle". The cost of employing machines such as these in building a mile of highway also adds greatly to the costs.

While increases have been noted in labor and material, these increases are counteracted by improved methods of construction, by modern machinery and by new designs. We in Illinois can see the design of the 1948 highway as we drive along. It is difficult to see the increased costs of labor, machinery and materials. We find the width of our roads increased now from twenty to twenty-four feet. No more seven inch concrete—now it is ten inches thick. This additional thickness reflects a sixty percent increase in the amount of concrete in the mile of highway. Six inches of gravel base lie beneath the new concrete. The increased thickness and the heavy gravel base give the road longer use, permit better service and will hold up under heavier traffic. We cannot



Taylor G. Soper

overlook the added safety factor in this new design which permits greater width. Also, to bind the concrete together and to give it more strength, miles of steel wire mesh are woven into it.

In earth-moving, four times the amount of earth is moved in building the 1948 highway as was moved thirteen years ago. In so doing, it has eased the grades, making them as nearly level as possible. The grade line has been raised over uneven ground and cuts have been made into the hills and slopes to maintain evenness. During winter, the new grades aid in the fast removal of snow while in rainy weather they carry off the water effectively.

Additional revenues must be found if our highway system is to keep pace with the traffic flow. In the not too distant future we can anticipate fifty million vehicles riding the highways throughout the country. Certainly, the highway revenues today cannot begin to adequately provide proper facilities.

Let us not forget that a trained and qualified highway engineer is an integral part of any good highway system. His services most certainly should warrant fair compensation. If we are to be assured of a continuing supply of graduate highway engineers, then we must be prepared to compete for their services along with business and industry. Highway agencies for too long have found their engineers leaving for better paying positions in private industry. They must make the economic attraction lucrative enough to hold their engineers and to lure the bright young engineering graduates into public service.

Chicago Traffic Recommendations

The Civic Committee of Western Society of Engineers, on November 7, 1947, submitted to the Honorable George D. Kells, Chairman of the Committee on Public Safety, the following data in support of a resolution of Western Society of Engineers for the reorganization of the Engineering Departments of the City of Chicago.

A thorough study of Chicago's traffic engineering needs and what the city might expect in better traffic movement has been made by Mr. George W. Barton of the Northwestern University Traffic Institute, and has now been submitted to the mayor.

Because of the public interest in these reports, we reproduce at this time in its entirety the report of the Civic Committee, and if possible, will publish the Barton report at a later date. Both reports are mentioned in the Chicago Daily News of November 9.

Title: Data in Support of Resolution of the Western Society of Engineers to Establish and Endow with Necessary Authority a New Organization of the City of Chicago to Regulate Public Traffic.

The source of all data used in the accompanying pages will be disclosed upon request.

Every motorist, every truck driver and every transit passenger who travels on the city streets knows that he is subject to much traffic delay. A reasonable estimate of hours so lost has not been possible, but there can be little doubt but what it is large. It has been guessed that \$1,000,000 a day was the value of such loss in New York City. Evidence points toward a similar loss in Chicago.

Traffic deaths in Chicago happen too often and there can be no denial that any attempt to reduce them in number is justified. Chicago has had a greater traffic death rate than any other large city.

The explanations and exhibits following, while not giving complete figures on the effects of traffic delays and accidents, will portray to a large degree the extent and seriousness of the traffic problem.

Traffic delay wastes time of street level mass transportation riders. Approximately 330,000 street level transit riders enter the Loop each weekday. About 50% of their total traveling time during the rush hours is consumed in traffic delays.

When it is considered that on only one major Loop street car line and in traveling only three blocks passengers lose 1150 man hours per day, it is conceivable that even a small improvement in traffic speed would result in a large over-all time saving.

Surveys indicate that mass transit riders generally lose around 15% of their traveling time in traffic delays. About 3,000,000 transit passengers ride approximately 4.7 miles each weekday. It is estimated, therefore, that all street level transit riders lose as much as 175,000 man hours per day. The production time of 85 men working an eight-hour day for one year represents the loss each weekday by these riders.

Trucks delayed in traffic results in added costs for all persons. A casual observation of truck operation in Chicago will convince any observer that delivery costs reflect the time wasted in traffic. Trucks maneuvering into narrow alleys or lined up waiting to enter an alley, and trucks helplessly idle in long lines of other traffic are good examples of how time is lost.

Delays Costly

While no city-wide estimate is immediately possible, enough data is available to prove that the annual figure of hours lost would be tremendous.

The experience of several large city trucking companies is represented on the chart to the left.

City planners say that traffic congestion is one of the causes of decentralization. Decentralization is happening to Chicago. It has been going on for many years. City planners assert that one of the reasons people and businesses move to outlying areas is to escape traffic congestion.

The chart dealing with manufacturing employment shows that there was a general increase in manufacturing employment from 1934 to 1940. It will

be noted, however, that the greatest increases occurred in the outlying districts, while there were some decreases in the near-loop areas.

Population has followed this trend also. The so-called blighted areas have shown a steady decrease between 1920 and 1930, and again between 1930 and 1940, except for a section on the south side.

Chicago has a poor traffic accident record. Of all cities over 500,000 population, Chicago has one of the highest traffic death rates. It is obvious that where congestion prevails traffic accidents happen. It is also obvious that congestion will prevail where traffic controls are not planned for efficient movement of vehicles. Accidents happen, too, where protective devices, such as lane lines, crosswalks, readable signs, and properly maintained traffic signals do not exist. These are all functions of a Traffic Engineering Department and for such a department to do its job it must be properly staffed and have adequate authority.

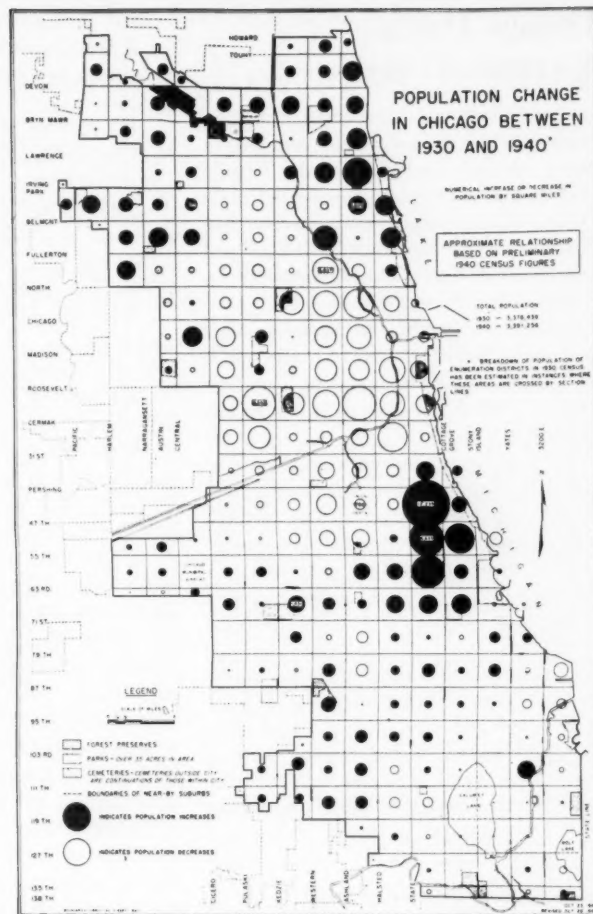
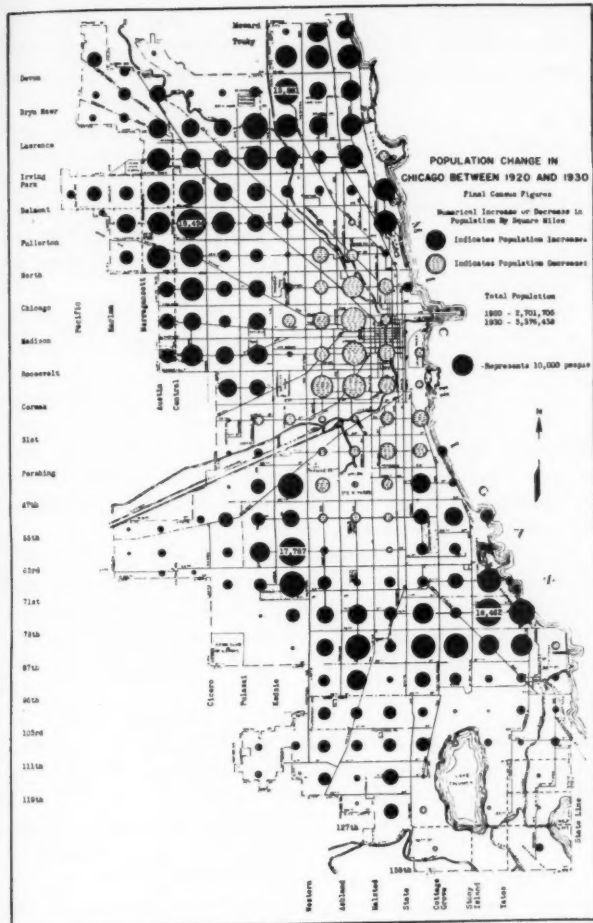
Traffic engineering is a proved method of speeding traffic and reducing traffic accidents.

Just like the planning that goes into obtaining safety features in industrial plants, planning is necessary in developing traffic control.

Planning and continuously effecting improvements will reduce the number of new situations which cause traffic congestion. Without planning, these situations will develop faster than a city Traffic Engineering Department can handle them. Good engineering requires the determination and elimination of such instances before they occur. It is believed that the present Chicago Traffic Engineering Division is far too small and has too little authority to properly handle present emergencies and is not equipped to do any amount of planning.

Traffic Engineering is one of the factors necessary to proper handling of traffic. Recommendations have been made for improving enforcement. Engineering also must be improved.

The importance of Traffic Engineering can be best shown by comparing traffic death rates and money spent on



such engineering for Chicago and other cities.

Traffic death rates show improvement where more money is available for Traffic Engineering. Four cities which spend more for Traffic Engineering personnel than does Chicago have lower death rates due to traffic accidents.

While it cannot be claimed that Traffic Engineering is the only factor in these reductions, it is certainly one of the more important ones.

Not only do all of these cities spend more per capita for Traffic Engineering personnel, but one of them, in spite of its smaller population, has a greater total budget than Chicago.

Traffic Engineering should be given the status of a city department.

It is believed that Traffic Engineering is of great importance and, besides having adequate staff and budget, should be given proper authority and recognition. Proper authority can best be given by organizing this function in a separate city department, reporting directly to the Mayor and the City Council.

At least one other large city, Detroit, has this type of organization. Detroit's traffic death rate is about one-half that of Chicago's.

Suggested Plan

May 31, 1947

A suggested plan by the Civic Committee, Western Society of Engineers, for steps to be taken by the City of Chicago toward providing an effective and continuing solution of street traffic problems follows:

1. A new City Department is to be created to be known as the "Department of Public Traffic."

2. This Department is to be administered by a "Commissioner of Public Traffic" to be appointed by the Mayor of Chicago.

3. The Commissioner is to be a Registered Professional Engineer, specializing in traffic engineering or a recognized authority in this branch of engineering.

4. The present City Traffic Engineering Division and Paint and Sign Shop, now a part of the Department of Streets

and Electricity is to be transferred to this "Department of Public Traffic."

5. The present Chicago Street Traffic Commission is to be replaced by a new Traffic Commission of the City of Chicago which is to be organized to propose, amend and establish policies to govern the operation of the proposed Department of Public Traffic.

6. This Commission is to consist of the "Commissioner of Public Traffic" as chairman, and other City Department Heads or Officials, such as Com-

(Continued on Page 10)

MEN Office Help WOMEN

STENOGRAPHERS
TYPISTS — CLERKS

Sommer Personnel System

"Organization Builders"

DE. 2—5850 31 N. State St.
Chicago, Ill.

Chicago Traffic Recommendations

(Continued from Page 9)

missioner of Subways and Superhighways, Chairman of the Chicago Transit Authority, Commissioner of Public Works, Commissioner of Streets and Electricity, Commissioner of Police, and Chairman of City Council Committee on "Traffic and Public Safety."

7. By ordinance the Commissioner and the Traffic Commission are to be delegated legal authority to establish traffic control regulations within prescribed limits.

8. It is to be the duty of the Commission to coordinate all efforts now being independently made by diverse bodies and agencies within the metropolitan area, on matters pertaining to or involving street traffic problems, and specifically within the City of Chicago it should:

- (a) Have jurisdiction over the establishment of curb parking regulations and over the establishment and use of street transit loading areas and cab stands.
- (b) Be authorized to issue other traffic regulations, such as turning prohibitions, speed limits, and through street designations.
- (c) Recommend to the City Council major traffic improvements, such as one-way streets.
- (d) Be in a position to pass authoritatively on all street improvements or changes which will effect street traffic movement.
- (e) Have jurisdiction over the installation, removal, or alteration of traffic control.
- (f) Have authoritative representation in the establishment of mass-transit street routes as they relate to street traffic movement.
- (g) Assuming that building codes and

(Continued on Page 11)

May 31, 1947

Resolution of the Western Society of Engineers to establish and endow with necessary authority a new organization of the City of Chicago to regulate public traffic.

WHEREAS, One of the most pressing and vexatious problems confronting the City of Chicago is to relieve or prevent street traffic congestion and to promote public safety on its thoroughfares; and

WHEREAS, The cost of traffic delays and accidents in time and money to everyone is excessive, inasmuch as unnecessary traveling time over city streets is wasted time to people being transported and results in additional costs to business organizations handling and delivering merchandise; and

WHEREAS, Many businesses have removed from traffic-congested areas to new locations, only to be again confronted by the same problem from which they fled a short time before; and

WHEREAS, As difficulties increase and business moves out of the city, property values decrease and thus the income of the city is reduced; and

WHEREAS, It is estimated that the amount of street traffic within the next three years will increase approximately thirty-five per cent over the present volume of traffic, and that such increase will add greatly to the burdensome difficulties already besetting the city and metropolitan area; and

WHEREAS, Many public bodies and civic and other organizations have given much time and consideration to traffic problems and have formulated plans and made suggestions relating to the flow of vehicular traffic, parking, terminal facilities, truck loading and routes, mass transportation carrier operation, and kindred matters, but such efforts have become inadequate to meet the increase in traffic congestion; and

WHEREAS, Solution of the street and related traffic problems of the City of Chicago requires comprehensive planning and the establishment of a central authority to coordinate the activities of all persons and organizations interested in, contributing to, and affected by such problems; and

WHEREAS, The Western Society of Engineers represents all branches of the engineering profession in the Chicago region and through its Civic Committee has obtained, in public and private meetings, considerable technical information regarding traffic problems in the Chicago area and also has made a long and intensive study of these problems; and

WHEREAS, The Civic Committee of the Western Society of Engineers has taken cognizance of many existing organizations, official and unofficial, including the present Chicago Street Traffic Commission and the Traffic Engineering Division of the City of Chicago, and has found lacking the comprehensive planning and centralized authority which would lead to a present and continuing solution of the traffic problems;

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Western Society of Engineers

1. That the City of Chicago take steps to establish a new organization (or organizations) with adequate authority and staff to handle effectively in a comprehensive and continuous fashion all problems and planning relating to street-traffic and associated matters; and

2. That a copy of this resolution be sent to the Mayor and to the City Council of Chicago.

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zoning laws are effected, which require off-street parking and truck loading facilities, have authority to pass on the conformance of building plans to these laws. In the event no such laws are passed, the Commission should be in position to advise on building items with regard to traffic movement.

In either case, the advice of the Commission should be recognized in the placing of drives, parking areas, and loading areas of all major building projects, particularly those which will materially affect traffic movement.

- (h) Have authority to delineate truck routes.
- (i) Be represented authoritatively in all public automobile parking ventures. In case a parking authority is established, its chairman should be a member of the Commission, otherwise the Public Traffic Commission shall function as a parking authority.
- (j) Take an active part, from the standpoint of traffic flow and traffic safety, in all proposals for street improvements, including construction of expressways.
- (k) Make intensive studies of accidents and effect remedies therefor.
- (l) Have under its jurisdiction a department of sufficient size and scope to carry out the duties outlined above.

9. The Traffic Commission should be authorized to appoint an advisory board consisting of representatives from organized bodies or agencies concerned with street traffic problems, such as,

City Plan Commission
Regional Plan Commission
Chicago Park District
Cook County
State of Illinois
Sanitary District
Engineering Board of Review
Railroad Terminal Commission
Air Port Authority
Port and Harbor Development
Various Mass-Transit Interests
Using City Streets
Trucking Associations
U. S. Army Engineers (local)
Chicago Chamber of Commerce
and Industry
Western Society of Engineers
Railroad Associations
Chicago Motor Clubs

Such advisory board, although not

Railroad Association and I. I. T.

Announce Research Center

Plans for a laboratory and research center for the Association of American Railroads, to be constructed on the campus of the Illinois Institute of Technology in Chicago, have been announced by William T. Faricy, president of the A.A.R., and Dr. Henry T. Heald, I.I.T. president.

The new central laboratory for the railroads will house the research and testing staffs of the Mechanical and Engineering Divisions and the Container Bureau of the A. A. R.

The laboratory, which will be built at a cost of \$600,000, will contain offices for the research staffs, laboratories for mechanical and electrical engineering, refrigerator car and packaging and container studies; and a humidity room for controlling testing conditions. Alongside the building will be a 600-foot impact test track, he said.

Mr. Faricy pointed out that it has been the policy of the A.A.R. to use industrial and university laboratories wherever possible in conducting its research work and no change from that policy is contemplated. Work will continue at the several laboratories now in use, and also in the field where both track structure and rolling stock are subjected to tests under operating conditions, he stated. However, he added, the new building will provide an improved central headquarters for the direction of this widespread research activity in the mechanical, engineering and container fields.

Dr. Heald noted that selection of Illinois Tech's campus as the site for the laboratory "adds another specific area in which the institution is serving industry through its research and educational activities and facilities."

"The alliance of Illinois Tech and the railroad industry in a joint effort to further the progress of one of the nation's great enterprises is another example of the mutual benefits which may be derived from a closer association between industry and higher education," he stated.

having direct authority over the Commission, should nevertheless render advice and give the Commission every assistance possible.

Mr. Faricy explained that the location of the research laboratory at the Illinois Institute of Technology will permit a close relationship with other staffs at the Institute doing similar work and will provide for an exchange of ideas and procedures. "The site of the Technology Center in Chicago's near South Side will make it readily accessible to railroad representatives for meetings," he said.

"Railroad research, directed at producing better, safer, faster and cheaper transportation, is carried on by many agencies," Mr. Faricy continued. "Individual railroads, cooperating university laboratories, manufacturers who supply railroad equipment, inventors, and railroad men who observe the daily operation of equipment, all contribute to the vast research reservoir of the industry."

The A.A.R., which conducts studies on problems of common interest to all railroads, has at present 200 technical committees carrying on more than 300 specific research projects.

The Mechanical and the Engineering Divisions and the Container Bureau of the A.A.R. are responsible for much of the research and testing carried on by the Association.

The Mechanical Division conducts tests and studies on the designing, development, and improvement of railroad cars, locomotives and the thousands of parts which make them up, while the Engineering Division carries on research on the components of the track and grades, as well as bridges and other structures along the right of way. Both divisions maintain electrical sections which are concerned with research on the widely diversified uses of electricity made by the railroads on everything from powering a 6,000-horsepower locomotive to opening train doors by photoelectric cells.

Freight container research is aimed at constant investigations of what goes on inside freight cars during transit and includes projects on materials, designs and marking of packages in which goods are shipped and the methods of stowing and bracing them in freight cars.

The subject of "Making Better Use of Present Facilities" is one that intrigues me and will intrigue you the more that you delve into its many ramifications. In studying the matter you will probably agree with me that it falls into two definite divisions: First is the one we are all so well acquainted with, the one that has been the foundation of traffic engineering—those techniques which deal with the physical plant of our profession. Upon this foundation the achievements of the profession stand as a monument to the pioneers of traffic engineering, but even in this division time marches on; evolution has taken place. New problems are arising and new techniques have to be devised.

As a typical example of present day headaches that confront us, just read your everyday newspaper headlines. They are "Traffic Jams in Cities Cause Heavy Losses" with a sub-heading "Rural Section Feeders Clog Arterials." Under this caption statements would be made to the effect that road history in the state has reversed itself in the past 30 years. City arterial streets are now throttling traffic, and causing grave economic losses, much as country roads were when the "Get the State Out of the Mud" campaigns resulted in a statewide system of rural hard roads. The article usually continues, "The disparity between facilities and needs now, is primarily in the urban areas where traffic congestion is critical," or, "none of the state or U.S. marked highway routes in urban areas are adequate for the traffic volumes pouring into them. Alternatives to their use are certain commercial thoroughfares or some other street with street cars and slow-moving traffic."

Such congestion invariably results in requests by communities for special regulations, which are restrictive in nature. This only adds to the general problem, and does nothing to improve movement or prevent accidents. Too often, engineering surveys of complaints reveal that, in the final analysis, "the most dangerous intersection in the city" is only an aggravation or an inconvenience in the minds of a few, rather than a genuine cause for complaint.

All of these complaints, all of this shattering of public nerves, are but the indicator of the damage that is being caused to the entire system of our city, state and national life. The suffering is reflected from the value of the most humble dwelling, to the commercial and

Making Better Use

Victor G. Hofer
Traffic Engineer
Chicago Park District

Presented before the Institute of Traffic Engineers, Annual Convention, Oct. 11, 1948 at Philadelphia, Pa.

real estate value of the greatest institution of the nation. You cannot divorce the consequences of a lack of traffic engineering, or poor traffic engineering, from the effect upon your values, upon your business, upon your operating costs, upon the health, welfare and contentment of your citizens. But, more about this, and the solution, in my second division of this problem.

Volume Predictions

There are many and varied predictions of future traffic volume increase. By 1960 vehicle registrations may increase 35%, but what's more important—half again as many vehicle miles will be driven. With governmental and municipal construction activities necessarily at a low ebb, we have a problem now, and apparently it will continue for some time to come.

During 1941 there were many cities and communities considering altering their traffic control devices, because of the then "all-time high" peak volumes of traffic, or because they wanted to modernize their traffic control devices generally. The war stopped all such programs. The early postwar period produced a shortage of materials and equipment—plus higher costs. However, shortages have eased, and necessary items, required to make better use of existing facilities, are now available.

Perhaps it is a little presumptuous on my part, to state that shortages are now decreasing. Our friend, Mr. Stalin, may have something to say about this and change our minds about the shortages; for, should we go through another blood bath, our entire thinking may be changed. The problems that we are thinking of, such as public ownership of parking facilities, may have to wait upon the dove of peace. Traffic volumes may again decrease to a trickle. But, with faith and hope in the ability of mankind to find a way of living with his neighbors, we go forward to the subject of techniques.

Many techniques, engineering and otherwise, may be employed that will definitely bring about a betterment of conditions. Papers to be presented at this conference will cover the most important methods. However, I should like to stress the importance of flexibility. This includes flexibility of roadway and lane usage, flexibility in regulations, and flexibility in the operation of traffic control devices.

In my opinion, the most important advances made towards improving capacities of existing roadways and its safety record involve non-static regulations. By using them, it is possible to use the full width of a roadway for moving traffic and curtail, proportion, or even eliminate, interferences to the principal movement. Thus, during peak periods of traffic, one set of regulations would be in effect that would provide maximum possible capacity requirements for directional thru movement, and during normal hours of traffic, still another set of regulations would be in force, when interferences would be no problem to lighter volumes of thru movement.

Conditions may indicate that a medial line, dividing opposing traffic, need not remain in the center of the roadway throughout the day. It may be shifted to provide additional lanes for directional rush period traffic. Or, pavement widths may allow an offset center line at intersection approaches, in order to provide for left turn storage, with no loss of thru traffic lanes.

Minor movements at intersections have long been one of our headaches. However, intersections may be closed to minor cross traffic during rush hours, if the pedestrian problem will permit. Further, certain intersections could be arranged for egress of principal traffic, but not ingress. Many combinations of routing are possible to give desired flexibility.

Now what about turning movements? Left turn movements may be eliminated

of Present Facilities

at signalized locations in progressive systems, during rush hours, in order to step up capacity. To make such a regulation effective, a flexible control device would display these regulations, when necessary, and remain blank when not required. Similar flexible control devices would take care of warning sign messages—operate when required or otherwise remain blanks.

We also have signal systems. They have long been one of our principal standbys to operate traffic. Greater flexibility of controls should be insisted upon in all modernization programs you may be considering. Flexibility of cycle length, flexibility in programs to meet different conditions—be they inbound or outbound rush hour volumes, so-called Sunday traffic, or to meet conditions imposed by recurring special events. Time space arrangements in your signal coordination may be arranged to limit entering movement to principal arteries in central business district areas, and thus encourage better usage of other lesser used roadways, thereby moving a greater total number of cars in a desired direction.

One-way traffic proposals were pushed into the background while superhighway plans were under way. Superhighways, of course, are a must, but construction is lagging for many reasons, including the housing shortage. Therefore, one-way possibilities should be reconsidered to meet immediate needs. They definitely should be considered for congested areas where turn movements and pedestrians are a problem, as well as a means of providing greater capacity and safety through improved signal coordination. These are standard uses of the one-way principle, but they have other applications. One of these applications is reversible usage. Traffic on the roadway can operate one-way during the rush hours and two-way during normal hours. Further, existing one-way combinations may require that one street be a two-way drive during rush hours. A radical

idea, but after you have thought about it, it may appeal to you.

I am going to say only a few words in regard to parking, our No. 1 problem, and confine those remarks to parking on roadways. Flexibility in curb parking regulations has many possibilities, the object of which is the provision of maximum roadway space for moving traffic. This includes all vehicles in the stopping, standing or parking classification. A regulation that is gaining ground on principal arteries provides no parking at any time for one block on either side of signalized intersections.

Deliveries A Problem

Heavily traveled roadways in business areas have been posted with peak hour "No Parking" signs with limited success, because, operators of commercial vehicles found this to be a nice period to make deliveries. In order to keep all vehicles rolling, certain main arteries may be posted with "No Commercial Deliveries Between Certain Peak Hours of Travel" signs. Further, it may be advisable to restrict truck movements during certain other hours, for various reasons.

Mass transportation improvements are making headway. Results in Chicago and many other large urban areas show definitely that a substitution of buses, either trolley or automotive, for fixed-rail cars has improved conditions considerably, both from a mass transportation standpoint as well as providing additional capacity for regular traffic. Removal of fixed rails from certain width roadways has the effect of a street widening. Usage of this fact should release money for other traffic improvements. No transit operator in a large city would put all of his eggs in one basket. Each type has many merits. However, the flexible use types lend themselves to (1) express type operation and should be principally reserved for areas requiring that type of service, and (2) for routes

in congested areas where curb loading would loosen up general traffic.

Concluding my remarks on flexible techniques, I have a note of warning. No matter what techniques or arrangements are used to expedite traffic in a particular area, one must make sure that the problem is not transferred to a new location. Relief from congestion invariably invites additional traffic, which may not only bring on new problems elsewhere, but aggravate the parking situation in terminal areas.

In many cases, lack of suitable zoning provisions results in new traffic generators being constructed, that ignore attendant traffic problems; thereby upsetting balanced conditions. Such creators of congestion not only lead to traffic paralysis, but to a city-wide decrease of realty values. To overcome such situations, consulting traffic engineering services are now available, more than ever before, to assist sponsors in their projects. There can be no parking or loading problems if off-roadway accommodations have been provided beforehand.

Other examples of a consulting traffic engineer's versatility will show that there were no major traffic problems at the recently concluded Railroad Fair held on Chicago's Lake Front immediately south of Soldier Field. The sponsors of the Fair employed a consulting traffic engineer who designed the required traffic facilities to accommodate a daily average of 40,000 people, over a three month period, as a self-contained unit. These facilities were independent of traffic service requirements for 100,000 people at Soldier Field events. Further, the consultant saw to it that the area for the event was not over- or under-spaced. Another project, now under way in the Chicago area—the 360 movement per hour super airport, has retained a consulting traffic engineer in the development, all the way from site selection to its present stage. What is more, he undoubtedly will be retained after the project is completed. The two examples just mentioned illustrate that, no matter what the specific problem is, competent traffic engineering will find a solution that will permit the project's realization as an integral part of the community, and not a burden for the municipal traffic engineer.

I have roamed throughout the book of traffic engineering, hitting the high spots and the low, dealing with that physical
(Continued on Page 14)

Making Better Use of Present Facilities

(Continued from Page 13)

foundation with which we traffic engineers have worked. If we are to content ourselves with those techniques, and those alone, the future will no longer call us traffic engineers of vision. It will catalogue us as the traffic repair men of the past. So, we must look to new horizons. We must make use of those facilities which are all around us today. They have been with us, but we have never fully recognized them. And because we have not recognized them, public opinion, industry, commerce and the government have not recognized us fully.

What are those facilities? They are John Q. Public—including the improved relationship between him and us; they are the influencing agencies, the planning agencies, the coordinated effort between various civic organizations, chambers of commerce, architects, engineers, hotel managements, parking managements, industrial managements, and the like. Generally, we always come after the problem has been thought of, after the problem has been created, after the problem has been planned, constructed and in most cases, many years in operation. Then we come in, to solve and remedy. Sometimes it is too late. We must take advantage of these facilities, intangible as they are in most cases, and be in on the ground floor. For the day that traffic is everybody's problem and nobody's responsibility has to go!

That fact brings me to the second half of my conception of "Making Better Use of Present Facilities." To me, it is the more important part of this presentation, for I believe it involves the hopes of our profession, our inspirations, and ideas for building for the future. To start with, we no longer can hide ourselves in a shell; we must expand to make our work more productive. We must make plans now, using an approach that will have a practical realization. We must sell ourselves, not as a profession, but as a service. We must do our work in such a way that it will receive greater acceptance by the public, enforcement agencies, government agencies and the host of others who are also vitally interested in traffic. We must make people understand how far-reaching our services really can be—not only from the usual angles of safety and clearing up local traffic problems—but from an economic standpoint, as well. This is very

important to every community in its relationship to its region, and the region in turn to the country as a whole. Traffic of any sort, that can move safely and efficiently upon a logical system of ways, to meet specific needs, is an economic asset.

Further challenges confront us in this new era in which we live, for we are experiencing new migrations—people are moving from the original heart of our cities. They are moving farther away from the center place of employment. New industrial areas are springing up on the periphery of large urban areas. The changing distances between places of residence, employment and recreation must be met through techniques providing greater speed and greater safety. It means greater volumes to be taken into consideration, and provided for, through our distribution system.

This population movement means redesigning our entire concept of city planning. In this concept we traffic engineers must take the initiative. We must work with scale. Scale in time, scale in area, scale in the concept of enterprise. We must take into consideration the fact that we are now in the push-button stage of human development. We must think in terms of leisure hours. We must think in terms of the elimination of daily tasks and daily drudgery. We must realize that labor no longer can be exploited, either through long hours or low wages. We must think in terms of new concepts of business and labor relations involving industry, and the government. We must also be practical and think of the ability of the taxpayer or our client. Is he able to assume the burdens of the new techniques? We must be ready to defend our new techniques and to show them from the social as well as the economic standpoint. We must, above all, work as a team with all the other arts and crafts who share these responsibilities.

Let us become a part of the city planning picture, and a part of the thinking of our people. Let there merge a living master pattern—not a drawing, not a picture, but a scheme of life with which the majorities will agree, and which will not discriminate against the minorities. Let this living master plan be truly flexible, so that it grows and changes with the times and the generations to come. Let it be understood not only by the profession, but by all of the people. Let it truly be a plan that lives and breathes with the city or community that it serves.

Let the component parts of this master plan take into consideration all of the arts and sciences that will make it successful. Let it be a harmonious plan—let it resemble the great artists playing under the leadership of a great master, playing the music of a great composer, in unison and harmony. In our profession, as in all others, there must be a leader, a coordinator that we may all follow in a master scheme.

We must establish leadership in all phases of traffic. Many agencies work with traffic, deal in traffic, or are directly affected by traffic. There are many overlapping agencies. Coordination and co-operation are required. That should be our duty. Not to dominate the field, but to help all concerned. A responsible head of traffic, call him what you will, would be a leader who would not wait for traffic problems to develop. He would anticipate them and, in concert with others, shape a solution. He would help to mould public opinion, and to guide commerce and industry in their problems.

The amount of traffic knowledge our profession has accumulated is like so much unmined gold, if people who need our help are not properly informed about what we have to offer as individuals and as collective members of the Institute of Traffic Engineers.

Individually, we can make better use of existing facilities by making use of services offered by others. Collectively, we can set our own star by comprehensive planning to obtain comprehensive results. Traffic engineering must get in on the ground floor for projects involving traffic, not only for municipal, state and federal projects, but for private ones.

We must take a bold stand on the future, by establishing leadership in traffic matters in a cooperative and coordinating manner. Thus, we will be making better use of existing facilities at our disposal.

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Snow Removal Big Item in ROAD MAINTENANCE

Charles M. Upham
Engineer-Director
American Road Builders Association

Snow, beautiful snow! This fleecy white mantle of winter may be a delight to poets, schoolboys and Christmas card artists, but it's a pain in the neck to maintenance departments of both urban and rural highways of the 36 states in the snow belt.

The United States has 217,000 miles of primary highways which would be blocked by snow part of the winter at least, and many miles of secondary roads and city streets which would be impassable were it not for the indefatigable efforts of state, county and city maintenance crews working with modern equipment which has been developed to meet this annual need.

The job of snow removal is one that must go on year after year. Snow fences help. We have 13,447 miles of snow fence in this country. Snow hedges and tree protection are also valuable. But these means of fighting drifts are only a small part of the total mileage threatened by the white crystals.

A well-organized highway department employs every facility to put its crews into operation at the first snow flurry. Weather reports and charts are studied closely throughout the entire area and also from as many points as practicable in adjacent areas. Key personnel are on duty 24 hours daily and relief crews are ready at all times.

Suggested Organization

The good organization set-up in many states includes an adequate number of divisions to handle the territory depending on the topography, mileage and amount of snowfall, each division being equipped with an office, heated storage facilities and a repair shop. Two-way radio-telephone connections are available between all division offices so that information on weather and road conditions can be transmitted and recorded constantly at all stations. Modern radio communication makes possible continuous progress reports by the working crews and keeps the division offices informed on emergency conditions and traffic tie-ups.

To facilitate snow removal all vegetation directly adjacent to the road surface and shoulders is removed before the

start of the winter season. All low culvert heads are marked with uprights to protect them from collisions with snow removal equipment.

In locating new highways, prevailing winds, sunlight, depth of fill and topography should be given consideration. Taking advantage of these in planning the alignment of the highway will lessen the work of snow removal especially in hilly or rolling country.

Advocate Standardization

Standardization of highway maintenance equipment has long been advocated. The Highway Research Board just before the war made a special study of this subject in order to recommend the most suitable and practical equipment for accomplishing specific maintenance operations. Its poll of the states and Public Roads Administration districts to determine the preferred snow removal equipment yielded these findings:

Push plows to handle 12 to 24 inches of new snow at truck speeds of 12 mph.

Reversible type push plows are efficient in fresh snow depths of less than 15 inches, although they lack the capacity of the one-way push plow.

"V" type plows to handle up to four feet of fresh snow at truck speeds of 3 to 6 mph. Equipped with wing blades, they are capable of maintaining sections where the maximum snowfall does not exceed nine feet.

Rotary type plows are found essential for opening, widening and clean-up operations where heavy and continued snowfall makes disposal necessary.

PRA makes these plow recommendations: For light snow—blades on truck

bodies or straight blades; for heavier snows—V-plows with wings; for very heavy snows—rotary plows.

The national inventory of snow removal equipment for 1946-47 shows 20,422 displacement type and 456 rotor type plows for trucks, 852 displacement type and 17 rotor type plows for tractors, together with 22,043 trucks, 1,259 tractors and 3,668 miscellaneous. With this equipment, 305,553 miles of highway were cleared at a cost of \$37,470,838. The average cost per mile was \$123, an increase of 11 per cent over the previous year.

Keeping the highways clear the year round is vital to some 26,000 communities that have no other means of communication with the outside world. If the snow hazard had not been solved, winter isolation would exist throughout a large part of the snow belt states. The resulting highway tie-up would put more than 10,000,000 automobiles in cold storage, and impair the usefulness of a large percentage of the 2,000,000 farm-owned trucks.

More than 4,000,000 school children ride to school in buses. The modern consolidated school depends entirely on the highway. There are 1,400,000 miles of rural mail routes serving 26,000,000 people. More than 7,000 public health nurses travel by automobile. Trucks deliver newspapers to millions of rural subscribers. Police departments operate 12,000 motor vehicles and fire departments employ 100,000 pieces of motorized equipment. All these benefits would be sadly crippled without adequate snow removal.

Fortunately ice and snow removal methods and machinery continue to improve. Thanks to organization and alertness on the part of our highway departments, snow storms meet immediate and systematic resistance. Now it must be a real blizzard to make us take down the "Business as Usual" sign.

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Automotive

Production in 1948 to Exceed 5 Million Vehicles

Three years ago, in October, 1945, the automotive industry reconversion from war work reached the point where the battle of postwar production got underway in earnest, according to the Automobile Manufacturers Association.

It's been an uphill struggle ever since, with strikes and material shortages holding down output and sending production costs soaring.

Despite these obstacles, here's the 36-month record:

1. A total of 11,889,400 motor vehicles produced, including 3,341,700 trucks and buses, and 8,547,700 passenger cars.

2. The production trend has been steadily upward, with 1948 output expected to exceed 5 million vehicles—a record topped only in 1929 when 5,358,000 vehicles were built.

3. Replacement parts continue to be turned out at triple the prewar peak rate, so millions of older cars can be kept in operation.

To achieve this record, the 56 U. S. car, truck and bus manufacturers have modified or discarded a number of prewar practices in order to get maximum production.

Since the war, the usual fall model change-over lull has been held to a minimum. No company has made more than one major model change in the last three years. Production in the last half of each postwar year has been higher than in the first half as manufacturers kept pressing for the highest possible production rate.

Another reason behind the abandonment of extensive annual model changes has been the industry's effort to keep the cost of its vehicles from rising higher

than they already have as a result of postwar increases in wage, material and operating costs.

One large passenger car manufacturer reported recently that re-tooling costs for his new models would reach \$75 millions — compared to \$15 to \$20 millions for comparable model changes before the war.

To keep assembly lines operating in the face of shortages of sheet steel and other supplies, manufacturers continue to charter airplanes today for emergency shipments, and depend more heavily than ever before on speedy truck delivery of many items that once came by rail or boat.

Since steel has been, and still is, the material in shortest supply, strikes in the steel and coal industries since the war have been the chief factor in keeping production of new cars well below the industry's capacity to produce.

More than 20 million tons of raw steel have been lost to the nation by strikes since the war. The automotive industry is the largest single user of steel, taking 15 per cent of the total output. Thus strikes in this vital industry have cost car makers 3 million tons of steel, or enough to build 1,500,000 new cars.

Industry officials say that of the 5,000 parts that go into the average motor vehicle, nearly every part except tires has been critically short at one time or another since the war.

Work interruptions have been due to lack of castings, bumpers, glass, seat springs, door handles, fuel pumps — and even lack of zippers for the tops of convertible models has caused assembly lines to shut down.

In all, automotive industry employees have lost over \$500 millions in wages since the war because of automotive plant strikes, or because of layoffs resulting from strikes in other automotive plants.

In addition, production has been

halted or curtailed more than 1,000 times since the war because of shortages of supplies from other industries.

Strikes also have been a large factor in higher motor vehicle prices since the war. For example, in one automotive plant, each idle day costs the company \$1 million simply for plant maintenance and other expenses.

Another example of how strikes have added to vehicle prices is that of one company that was recently shut down for several weeks because of a strike in a supplier plant.

When the plant resumed operation, officials found that over a third of all employees had taken jobs elsewhere, so thousands of new men had to be hired and trained.

The plant's production schedules called for more than 150 vehicles to be turned out daily. With new men on the job, only 23 vehicles passed inspection the first day. It was several weeks before the new men were sufficiently trained to let the plant operate normally.

The cost of training thousands of new employees, and of running the plant for weeks on an inefficient basis, all added to operating costs.

In spite of such obstacles cited above, U. S. plants turned out 2,771,000 passenger cars and 1,047,000 trucks and buses in the first 9 months of 1948, or a total of 3,818,000 vehicles.

This was 9 per cent above the 9-month total for 1947. If the rate continues for the rest of 1948, the year's total will exceed 5,200,000 vehicles.

However, steel shortages may reduce this total to around 5,000,000 vehicles. Industry officials believe 5 million vehicles are about the most they can produce next year also. For while steel output is rising, and already is above all past peacetime levels, military and European aid needs will divert part of the additional steel from civilian markets here.

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Trucks Increase Freight Share

Truck driving alone accounts for 3 1/2 times as much employment as all U. S. railroads, declares a new national report on trucking by the U. S. Department of Commerce.

The report cites a 1941 survey showing that trucks handled virtually all the 5 billion tons of local U. S. freight, and 16 per cent of the nation's 4 billion tons of intercity freight movement.

Since the war, the report adds, trucks have taken a steadily larger share of intercity freight tonnage. Where railroads have increased their freight 77 per cent since 1939, intercity trucks handled last year 177 per cent more freight than they did before the war.

And compared to the 1,358,000 railroad employees in U. S. in 1946, truck drivers alone numbered 4,753,000 — not including several hundred thousand more people employed in trucking companies in addition to those working as drivers.

The report was prepared before recent increases in railroad freight rates added new impetus to the trend toward trucking. But it pointed out that trucks enjoy several advantages which will continue to increase their use.

The advantages include lower freight rates, faster service, elimination of packaging and terminal loading costs, greater reliability, and 77 per cent less loss and damage costs than rail freight.

The report cited criticism of the Federal Interstate Commerce Commission regulations on interstate trucking as preventing the most efficient use of trucks and thus denying the public lower trucking rates.

It also quoted the U. S. Department of Agriculture as fearing that attempts of the ICC to regulate farm trucks — which Congress has exempted from ICC control — will increase the cost of farm products.

A concluding section of the report deals with the conflicting state laws on vehicle sizes and weights as another barrier to efficient, low-cost truck transportation.

The ICC asked Congress before the war for authority to regulate vehicle size and weight limits. Highway user organizations have consistently opposed

federal extension of control in this field, pointing out that it would require a federal police force, that the states have made good progress since the war in removing restrictions, and that since the states own, build and maintain the nation's highways, they should set the limits on vehicle sizes and weights.

As an indication of the growing importance of trucking, three in every five new motor vehicles in U. S. now are being delivered by highway transporters. Delivery within 300-mile radius of the assembly line now is being made the morning after vehicles are built.

Milk companies now own 120,000 trucks; petroleum firms, 150,000; meat packers, 100,000. Even steel, traditionally moved by rail, now can be moved at lower cost by truck between Eastern and Midwestern points.

Trucks in use in the nation will reach 7,500,000 by the end of 1948, compared to 5,100,000 in 1941. Only about one in eight trucks is used for other than local hauls, however.

Truck production for the first nine months of 1948 reached 1,037,000, or 13 per cent above the rate for last year, when an all-time record of 1,220,000 trucks were built.

National Grange Adopts Highway Plan Program

The National Grange, in its 82nd annual convention at Portland, Me., adopted a seven-point statement of highway transportation principles in which it reaffirms its support of long-range highway planning in the states and rejects the use of tolls as a highway financing measure.

The program recommended includes:

(1) Liberalization of Federal standards for secondary roads; (2) creation of legislative committees in the states, with highway user representation, to study highway needs; (3) uniform motor vehicle laws in all states; (4) passage of anti-diversion amendments to protect highway funds from non-highway use; (5) uniform size and weight laws for commercial vehicles; (6) building of free roads rather than toll roads; (7) opposition to so-called "integration" of transportation.

On the last point the Grange said, "Since serious consideration may be given to this subject in the next Congress, we reaffirm our stand of previous

Highways

Carrying Record Volume Of Motor Travellers

It's cheaper for a family to travel by car or bus than by train or airplane. And this year our highways are carrying a record travel volume as a result.

Automobiles alone account for over 600 billion passenger-miles of U. S. travel yearly, compared to about 25 billion each for day coaches and intercity buses, 12 billion for Pullman trains and 6 billion for airplanes.

While rail travel is off 10 per cent and air travel is down 3 per cent, motorizing is 7 per cent above last year's all-time high. Bus travel in most parts of the nation also is increasing.

The reason is shown by this table on round-trip costs for a typical family (three full fares and one half fare):

	New York to Chicago	New York to Los Angeles
Automobile	\$ 48.00	\$ 142.50
Bus	87.74	327.85
Day Coach	167.23	494.27
Pullman	334.52	954.46
Airplane	350.98	1,247.50

The costs do not include meals or tips. The automobile costs take in gasoline, oil and toll-road charges, but do not include overnight room rent.

Vacation travel by automobile reached a new high this year, and motor tourist cabins reported a record business. Hotels now are seeking ways to win motorists' patronage.

Airlines, railroads and bus lines too are planning new services and special rates, as competition for the traveler's dollar grows keener.

years in opposition to such integration and recommend that competition among the various forms of transportation should continue to exist in the future."

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Wisconsin Studies Highway Code

A major step toward traffic safety by bringing Wisconsin's traffic laws into closer conformity with the national model code was taken in November. The Wisconsin Highway Users Conference, in cooperation with the National Highway Users Conference, presented to state officials a painstaking 132 page comparison of existing Wisconsin laws with the parallel provisions of the Uniform Vehicle Code.

Presentation was made by Stuart B. Wright, chairman of the Wisconsin Conference's Committee on Uniform Laws and manager of the Wisconsin division of the American Automobile Association. This is one of the many highway-users groups affiliated with the Wisconsin Conference.

Receiving the study, on behalf of the state government, were Ben L. Marcus, commissioner of the state Motor Vehicle Department, and James R. Law, State Chairman, Highway Commission of Wisconsin.

In presenting the comparison study, Mr. Wright noted that Wisconsin has been a pioneer in speeding important phases of traffic uniformity. He recalled that the state was one of the first to introduce uniform signs along its highways early in the 1920's.

"Again Wisconsin can lead in doing something about our confusing array of differing state highway laws and regulations," Mr. Wright said. "The first step toward curing this situation is to find out how the state laws differ from the proposed Uniform Code. The National Conference's assistance to the Wisconsin Conference has helped make this comparison possible."

Highway Chairman Law said that without this comparison, citizens and legislators working for the cause of uni-

form vehicle laws would be working largely in the dark. Provisions of state law dealing with traffic are so numerous, he said, that a point-by-point comparison with the Uniform Code is a "massive" job for individuals. This model code comparison simplifies the task.

"By making this comparison, the Wisconsin and national conferences have performed a public service that can be a real weapon in the war on traffic accidents and congestion," Mr. Marcus declared.

The crusade for uniform laws, now being carried on by hundreds of organizations interested in highway safety, was first started by the National Conference on Street and Highway Safety in 1926. The Uniform Vehicle Code which it developed was extensively revised this summer by the National Committee on Uniform Traffic Laws and Ordinances to meet current conditions. These changes are included in the Wisconsin comparison study.

There are five acts in the Code, but the Wisconsin comparison covers the fifth, considered to be most vital in safety programs. This act includes right-of-way rules, arm signals, dimming lights, making turns, school bus stops and other items where there is wide divergency between the laws of the various states. Each such divergency may lead unwary out-of-state drivers into trouble, and each brings its share of accidents or death.

The comparison has been a project of the Uniform Laws Committee of the Wisconsin Highway Users Conference. Appointed to this committee by F. M. Elliott, chairman of the Wisconsin Conference, besides chairman Wright, were Louis Milan, executive secretary, Wisconsin Automotive Trades Association; Edward J. Konkol, general manager, Wisconsin Motor Carriers Association, and George Manson, president, Wisconsin Bus Operators Association.

Examination of the comparison study reveals that Wisconsin in many respects is in more general conformity with the Uniform Code than many other states, and that in some cases the differences between existing laws and the model code are small. However, the Uniform Code prescribes specific arm signals by drivers, whereas the Wisconsin law has

WSE Staff Moves Into Headquarters

November 5, 1948 — a day set apart from all other days in our recent memory. We jumped out of bed more eagerly than usual, swallowed a hasty cup of coffee, and ran for our train.

We entered at 84 E. Randolph Street with new expectation. No more plaster dust in our hair, no more jangling pipes, no more desks moved out of line. Or sudden floods as some newly connected pipe burst forth in enthusiasm, to drown a few precious papers.

Now, at last, we would have clean desks, reasonable quiet, water to drink. Now our duties could be fulfilled on schedule, without unforeseen delays.

We are now installed upstairs and are gradually putting our supplies in their proper places. In another week or so we'll be set to give the membership better service than ever before. With our clean gray walls, and luxurious new built-in shelving, we plan to be the most orderly group you've ever seen.

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Drop up and see us.

Personal *

Mr. Thomas H. Coulter (M '42), has been admitted to partnership in the firm of Booz, Allen and Hamilton as of October 1, 1948. The firm, with Chicago offices at 135 S. LaSalle Street, furnishes business surveys and management counsel for its clients.

no such requirement. If a driver does signal, this signal might mean one thing to a driver from one state and something entirely different to a driver from another.

On the subject of speed, the Code provides a maximum speed of 50 miles an hour in the daytime and 45 at night, whereas state law says speed shall not be greater than "reasonable and prudent" where not otherwise limited. Wisconsin also has no law requiring periodic motor vehicle inspection, while the Code includes a full section on this.

It was noted at the meeting, however, that the Uniform Vehicle Code is not inflexible, and that while some states might adopt its provisions in full, others might decide that particular sections were premature because of local state conditions.

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ANALYSES REPORTS APPRAISALS

U.S. PATENT LAW

Seriously Altered by Supreme Court Says Ohio Attorney at Annual Meeting of A.S.M.E.

The assertion that a sweeping change in the patent system of the United States has been made by the reformation of patent laws by judicial instead of legislative process, was made by H. A. Toulmin, Jr., attorney, at the machine design luncheon of the Annual Meeting of The American Society of Mechanical Engineers. He called for "final determinative legislation" by Congress to clear up the question of whether or not the Supreme Court has "erred and must be corrected." Mr. Toulmin is a member of the Dayton, Ohio, firm of Toulmin and Toulmin that specializes in corporation and patent law.

The Annual Meeting opened November 28 at the Hotel Pennsylvania in New York City.

The speaker said it was a matter for the engineers to decide "whether it is for the benefit of the nation or not, and whether the Supreme Court of the United States has gone beyond its constitutional authority in this revolutionary reformation and destruction of established patent rights, as interpreted by our courts universally for more than a century."

That there has been a revolutionary and wholesale change of practically every established concept of patents and the patent law is universally agreed, he said.

"It is axiomatic," he declared, "that the patent system of the United States, designed to protect the fruits of the engineering, scientific and inventive brains of our country, has been one of the cornerstones of our industrial success."

"The statistical record shows clearly that the industrial prosperity of any nation is indisputably connected with the extent to which patent rewards are granted to stimulate invention and to protect the results commercially."

Mr. Toulmin pointed out that engineers have a primary stake in the patent system, not only in the creation of new engineering developments, but also in their continued employment and mass production. He characterized patents as "the foundation and protection of the creative side of American industry" and said that without the patent weapon,

much of the justification for the engineers' work in the eyes of those who employ him would disappear.

Serious Threat to Prosperity

"Although our patent system is based on the sound foundation of a constitutional provision provided by our governmental founders for the protection of invention, we find ourselves at this time confronted with a serious threat to this foundation of our prosperity," he told the engineers.

Mr. Toulmin discussed some of the broad rights formerly accorded to a patentee and described the extent to which "these rights have been taken away from him by judicial pronouncement," by citing Supreme Court decisions. Among the decisions he discussed were those affecting contributory infringement, functional claims at the exact point of novelty, right to patent a complete machine when only improvements have been added, "misuse" of patents, rights under licenses and cross-licenses, estoppel and international agreements under patents.

He warned that engineers and manufacturers would "do well to ponder these sweeping changes" in connection with their rights and privileges under the patent laws of the United States. "It would seem," he continued, "that many of these decisions were properly within the province of Congressional legislation and not judicial determination."

Mr. Toulmin stated that despite the countless bills introduced into Congress by the Department of Justice under various administrations to effect changes in

the statutory law which the Supreme Court has put into effect by judicial pronouncement, Congress has consistently refused to adopt such restrictive laws.

Calls for Legislative Action

As a clarifying remedy, he suggested the "enactment by Congress of final determinative legislation to clear up the question of whether the Supreme Court of the United States is acting within Congressional intention under the present statutes or whether it has erred and must be corrected under our system of checks and balances by new legislation of Congress restoring to the patentees the rights taken from them by the Supreme Court and other courts, after having been granted to them by Congress for more than a century of our history.

"It would seem that the prosperity based upon this century of interpretations should not be lightly cast aside by judicial pronouncement," he concluded. "If the elected representatives of the people wish this to be the way of our life, then so be it; but the engineering profession and the manufacturing interests of this country—so largely based upon invention—should at least have 'their day in court' before Congressional committees and a review of the situation by Congress in view of the importance of the issue."

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Wake Up to Your Civic

Royal A. Stipes, Jr.

President, Illinois State Chamber of Commerce

President, Stipes Publishing Company, Champaign, Ill.

Two years ago, Congressman Everett Dirksen of Illinois addressed an Illinois State Chamber of Commerce annual meeting. The Congressman made a statement that night which I have tried to preach wherever I have gone in the state. He said, "It is time for businessmen to get into politics up to their teeth."

Congressman Dirksen hit the problem of the businessman squarely on the head. For years, not only in Illinois, but throughout the country, men who have had the intelligence to run businesses successfully have been timid when the time came for action on civic matters. We can blame no one but ourselves for the bad legislation we get, or for the inefficient operation that has been experienced from time to time in the many branches of local, state, or federal governments.

But a gradual change is coming about in this attitude of reluctance to participate in politics and civic affairs. For more than four years, both as chairman of the Illinois State Chamber of Commerce legislative committee and now as its president, I have traveled our state and have been in a position to observe businessmen's attitudes. Businessmen are beginning to realize that if they want

more efficient government and better legislation, they must speak up for it. And they must speak up for it starting at the town meeting and Board of Supervisors level. They must assist in the planning. They must be constructive. They must volunteer criticism or approval (particularly approval) when either is warranted. As individuals, businessmen are beginning to take a more active part in making their own futures, which are dictated to such a large extent today by the actions of local, state, and federal bodies.

This changing attitude can best be illustrated by citing the growth of interest in civic affairs through the Illinois State Chamber of Commerce. Probably similar growth of interest in civic programs has been experienced by other professional or business organizations.

During the past year, 1,021 new firms in Illinois joined the State Chamber. At the present time, more than 8,500 businessmen and women in the state are on the State Chamber membership roster, interested in advancing a program designed for the best interests of the whole state and all its people.

On broad civic issues in our state, the State Chamber can bring diversified, specialized knowledge from all fields of

business to bear on problems in any field. At the service of the people of Illinois is the best thinking of top executives — attorneys, engineers, production men, accountants, retailers, bankers, personnel managers, craftsmen, and many others. All of these groups are represented among the 541 people on State Chamber committees working in specific fields of activity. Each activity deals with problems beyond the control of any one business or any single individual.

This is the *biggest* benefit of organized interest and participation by all business in civic affairs. The brains of experts are harnessed through organization into teamwork which no business or individual in Illinois could afford to put on a single payroll.

In agriculture-industry relations, for instance, the Illinois State Chamber committee of 74 business and professional experts has promoted, during the past four years, organization of local activities in agriculture-industry relations in 95 major Illinois communities. Utilizing the intelligence of this wide variety of experts at the state level, the State Chamber was able to organize more than 4,000 people across the state who are now tackling the same civic

UNEMPLOYMENT COMPENSATION tax savings are graphically demonstrated to State Chamber members at symposium during 30th annual meeting in the Palmer House October 8.



ILLINOIS HIGHWAY PROBLEMS were debated by this panel during the State Chamber's 30th annual meeting in the Palmer House, Chicago, October 8.



Responsibilities

problems of relations between farm and city residents at the "grass roots" level.

In aviation development, our committee workers recommended a network of feeder and pickup airlines to serve the entire state, and to improve east-west travel facilities in Illinois. This proposal was made back in 1946, and it was interesting to note in the report of the consulting engineers to the Illinois Department of Aeronautics in October of this year the inclusion of comprehensive plans for such an air network as a major portion of plans reaching forward to 1970. In this same field, the State Chamber contributed service by its support of practical legislation in Illinois to establish Municipal Airport Authorities. This enabling legislation has contributed during the past two years to the growth of adequate airport facilities in several major communities.

The problems of public education have attracted more attention during the past three years than almost any other issue. Only by free education can our country continue to be the country that we have always known. It is vital that businessmen and professional educators sit down across the table, first on a state-wide basis and then on a local basis, to reach an area of agree-

ment and mutual helpfulness. Business people *must* be made more *aware* of education and not just take it for granted — so, here again, businessmen through their State Chamber are working to produce solutions to problems which are beyond the control of any one business or individual, yet affect the future welfare and success of any enterprise or person in the state. Our committee in this field will, within the next few months, produce recommendations based on expert individual business experience, plus statewide business cross-section experience which should go far toward alleviating the shortage of qualified teachers, solving some of the financial problems of school districts, and awakening new interest in educational problems on the part of business people throughout Illinois. And again I say we believe one of the most important contributions this committee can make will be to produce and put across a program to build better understanding between businessmen and educators at the local community level.

In the fields of federal taxation and state and local taxation, the State Chamber has two of its most active, well-informed committees at work. Revenue problems confronting Congress and the Illinois General Assembly during the

next few months have already been studied by Illinois businessmen working through their State Chamber of Commerce. We have put business brains to work to solve these matters which affect the pocketbooks of every citizen of the state. Recommendations will be based on intense detailed research which will command the respect of our legislators and Washington.

To reach a better understanding of the significance and effects of social security legislation, we have still another group of lay experts and qualified business heads. Perhaps no other type of legislation has greater implications for the future of our American economic system than has the social legislation in the fields of social security and unemployment compensation which this group is watching.

(Continued on Page 22)

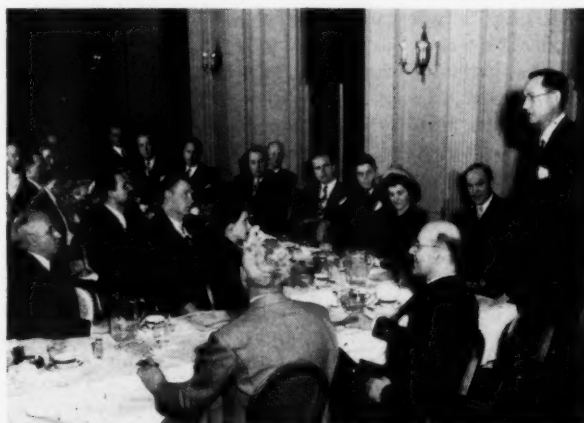


Royal A. Stipes, Jr.

Congressman Dewey Short (standing left) makes a point during debate of election outcome, feature of State Chamber's 20th Annual Banquet at the Palmer House October 8.



Committee meeting to discuss Illinois aviation problems February 13, 1948, sponsored by State Chamber.



Wake Up to Your Civic Responsibilities

(Continued from Page 21)

The same type of work is being done in the field of Personnel and Labor Relations. A committee of 44 businessmen, some of them personnel experts and others employers or business executives, has framed a program for local community activity which will definitely bring about better understanding of the problems of management and workers in Illinois cities. In addition, the group has kept its eyes on labor legislation, attempting to bring the viewpoint of enlightened businessmen to bear on issues which affect every payroll and every paycheck.

Judging by the growth and extent of that over-all State Chamber program, business people are taking greater interest in civic and community affairs. The machinery which the State Chamber organization has provided works two ways. It enables business to produce constructive recommendations and plans for the solution of problems in the best interests of all the people of the state. At the same time, it produces a better informed business community encouraged to take a greater share of responsibility and interest in affairs of their local, state, and federal governments.

There has never been a time when this interest and participation was more essential.

The highly publicized "ism" threats of the day cannot be defeated by merely writing a check — by paying some organization to do the job of replying. As businessmen — engineers, lawyers, merchants, industrialists, and just plain working men and women, we must "get into politics up to our teeth."

It is our duty to contribute that solid middle-of-the-road judgment, based on broad experience, which will point out the practical solutions to civic and social problems. We cannot afford to disregard the operations of the radicals. We cannot expect to answer their challenge with bland superficialities and generalities. Our contribution must be substantial, well directed planning. It must be constructive, based on the organized and integrated intelligence of people who have built business, and who make the wheels of this country's economy turn in a manner that no other nation in the world has known.

Survey Explores

BASING POINT POLICIES

A survey made by the Chicago Association of Commerce and Industry shows that a relatively small proportion of Chicago industries have made any change in their pricing practices as a result of the cement case decision and later basing point decisions.

Wilfred Sykes, president of the Association, said that 252 industries replying to an Association questionnaire were "nearly evenly divided" between those selling f.o.b. point of origin and those selling f.o.b. destination—"that is, on the basis of a uniform national price or on the basis of uniform prices within specified zones."

In a page of comment which accompanied the results of the survey, the Association called attention to "a diversity of practice and a diversity of attitude" among manufacturers. The division of sales practice probably reflects the fact that Chicago is a city of outstanding diversity of types of manufacturing, according to the report.

Quoting from a recent study by the Federal Reserve Bank of Chicago, the Association report calls attention to the statement that "the greatest single distinguishing characteristic is the Chicago

area's unparalleled diversity rather than the prominence of a single type of manufacture, trade or service."

In considering the replies received from Chicago business establishments, Sykes said, "It is impossible to tell at this time whether the variety of opinion expressed grows from the differences in marketing and purchasing problems confronting Chicago industries or whether it results from the widespread confusion which exists as a result of the court decisions involved.

"Some businesses sell many different products," he said. "They may have long established practices, which they believe demonstrate that it is advantageous to sell some of their products f.o.b. point of origin while it is more profitable to sell others on a delivery basis.

"These same businesses purchase materials and supplies of many varieties. When the problems of purchasing these different supplies is added to the problem of selling different types of goods, the difficulty of determining which form of pricing would be most advantageous becomes even more complicated. Advantages in one type of selling may be offset by buying costs if their suppliers change their methods, and vice versa."

As individuals, we should contribute our efforts and intelligence through groups such as the Chamber of Commerce, and through our professional societies which have such wonderful opportunities for public service in their fields. And as individuals, also, we must get into politics not as complainers, but as supporters of a good cause. When our congressmen or state legislators face decisions, we should know enough about the issues to be able to write to our representatives and give them sound arguments for or against the proposal. If, during an election, we believe the congressman or legislator from our district has done the right job, we should support him — regardless of his party. If his work has not been satisfactory, we should support an opponent who will do a better job.

Those are the things for which we as citizens and business leaders are responsible. Should we stand idly by and permit decisions to be made without this contribution, we shall have no right to complain.

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The Conference Technique

Frank Culhane

Area Supervisor, Illinois State Board for Vocational Education

The Conference Technique is widely used to conduct meetings of executives and supervisors. The method, after some thirty years of use, is generally accepted as the best method of training supervisory personnel. What is not so generally known is that it is also the best method known for securing an answer for many of the perplexing problems that exist in all construction and manufacturing organizations. It is a method that should appeal to an engineer because it follows closely the steps in the scientific method. When it is properly used it eliminates the pointless discussion, loose thinking, and waste of time that are characteristic of too many staff meetings.

There are two distinct parts of the Conference Technique. First, the method of *breaking down the problem* into logical steps necessary to think thru the problem to a solution. Second, the method of conducting the meeting so that group experience is brought to bear toward the solution of a specific problem. There are several systems of conferences, some of which are specialized to fit a particular type of problem. In all systems the leaders use the same devices for control and guidance of the group. All systems use charts of newsprint or columns drawn on a blackboard to break down the problem. These charts, with their visual impression, help to organize thought, prevent repetition and keep the discussion concentrated upon the immediate topic.

The basic formula for a breakdown as developed by Charles Allen, Frank Cushman, and others was: Error—Cause—Remedy, or Cause—Who or What Is Responsible—Ways and Means.

Variations of the originals follow:

1. Unsatisfactory Situation—Who or What Is Responsible—What Can Be Done About It.

2. a. Situation—(Stated in not more than five simple sentences.)

b. Purpose or Objective of the meeting. (This is a specific statement limited in scope to the time available and stated in one simple sentence.)

Difficulties in Attaining Objective—Suggested and Possible Solutions (Solutions to be specific in terms of who, when, what, how, if possible.)

3. Duties and Responsibilities—Degree To Which They Can Be Delegated (0 1 2 3 4 5 6 7 8 9 10)

4. A system developed by J. L. Wolf, called the Production Conference, utilizes only one breakdown. One feature is a time schedule which is marked down in advance; for example: 10:00 Objective—10:10 Obstacles—Solutions

A Conference in Action

In a typical planned conference some 16 to 20 experienced persons, drawn from the same level of experience, are seated at tables arranged in a "U" or "T" formation, facing the blackboard or charts described earlier in this article. A trained leader states the situation that makes the meeting necessary in not more than five simple sentences. It has been found thru experience that the most complicated situation can be stated within this limit. He starts discussion by means of an illustration or an actual case or by means of two or three questions. When a common understanding of the situation is reached, the leader writes the objective of the meeting in one short simple sentence at the top of the blackboard. Contrast this system with the long-winded introductions used at so many meetings.

Training Is Needed by Leaders

Training and skill are needed to start a group discussion, and when once started, to keep it rolling on the specific topic. Real skill is necessary also to draw out the timid, suppress the aggressive, and in some cases to control the situation when overheated individuals lose their tempers and engage in personalities. Space does not permit a description of the devices used to control these situations but one illustration may be of interest. Two members of the group engage in a spirited defense of their respective departments. They

become angry and start a heated argument. The leader walks between the tables to a position where he interferes with the line of vision between the men. They halt, because men cannot argue successfully unless they are face to face. The moment they quiet down the leader asks a direct question of a member remote from the combatants. He keeps the discussion rolling until the men cool down.

A Leader's Preparation

Conducting a meeting or leading a conference is not as easy as it looks and it is an insult to waste the time of busy men by entering a conference unprepared.

1. Make sure you *know the purpose* of this particular meeting. Unless you know it you cannot expect others to develop a common understanding.

2. *Limit the Scope.* Do not take in a lot of territory. After all, you are limited on time. Concentrate on the purpose of this meeting and the time you have available.

3. When the objective is clear to you *write it down.* Rewrite it until you can make a statement of your purpose in one simple sentence. Examples: Objective: "To Reduce Waste in the Lathe Line," "To Discover Situations That Make Cooperation Difficult," "To Produce Lamps Free From Nodular Parasites," etc.

4. *Prepare a statement of the situation* that makes the meeting necessary. This is all important. It is the introduction to the meeting. This is the point where observers claim a meeting is won or lost. Most introductions are too long and too vague. It takes too long to develop a common understanding of the problem. As a result too little time can be spent on the real core of the meeting. The steps which follow have proven to be successful in a wide variety of meetings. It has been found that the most complicated problem can be introduced in from three to five simple sentences.

(Continued on Page 24)

Group Discussion Under The Conference Technique

(Continued from Page 23)

These statements with supporting data or cases are usually sufficient.

- a. Find out all you can about the situation, the policy, the material, etc. Interview persons concerned. If it is a production or personnel problem visit the site or the individuals concerned. Get any data necessary.
- b. List the information on cards.
- c. Break down the information into a series of statements of the situation as it exists.
- d. Rewrite and simplify the statements. Analyse each statement—reduce from paragraphs to sentences, from long sentences to short ones. Keep the meaning clear. Limit the scope. Use not more than five statements.
- e. Prepare any illustrations, cases or examples you may need.
- f. Plan the physical set-up. Procure all the materials needed in the conference.

Personnel Problem

Outlined below are three examples of possible treatments of problems.

1. Personnel problem in a manufacturing plant.

Situation:

1. Cleaners will not stay on the job in 504. They quit or demand transfers.
2. Transferred workers quit.
3. Workers refuse transfers.
4. Turnover is high. 32 men on payroll, only two with three weeks' service.
5. Most "quits" on first day.

Objective: To get and retain cleaners in 504.

Manufacturing Problem

2. Problem in a manufacturing plant.

Situation:

1. There is a lack of uniform procedure, common understanding and coordination between groups concerned with rigging.
2. "Squawks" are excessive.

Objective: To eliminate difficulties and reworks in engine and power plant rigging aft the fire wall.

Labor Problem

3. A labor problem.

Situation:

1. There is a temporary labor surplus in Dept. 1.

2. A shortage exists in Dept. 2.
3. No outside labor is available.
4. Surplus labor when laid off leaves town.
5. Workers refuse to accept transfer to Dept. 2.

Objective: How can we obtain workers for Dept. 2. Reasons workers give for refusing transfer—How can these be minimized or overcome.

There are times when the real objective cannot be expressed but the leader must have the situation clear in his own mind. An example is where conferences are used to discuss cooperation, leadership, etc., and where the real objective is to modify the behavior of some individuals in the group. In these instances the situation is expressed in general terms. Group members develop the situations that handicap cooperation, and then work out ways to overcome the handicaps. It is interesting to note that there are approximately 24 to 30 reasons regardless of the type of business represented. Conferences on leadership develop the evidences of poor leadership, qualities necessary for successful leadership and the 10 to 15 reasons men fail as leaders. The effect of such Conferences is startling when they are conducted by an experienced man.

Words to Avoid

Unless the group has a common understanding of the words used in the discussion they cannot make an intelligent contribution.

Words to avoid are words like, "personality", "proper", "clothing", "cooperation" (unless defined), "efficiency", and all similar words that cannot be defined so that each member understands the exact meaning. Poor supervision is an example of an overworked word that has no exact meaning.

Persons of foreign extraction, who learned to speak English later in life, think in terms of their mother tongue. First, they think in the foreign language and then translate into English. They have difficulty in recognizing words that are not commonly used. For this reason, it may be necessary to use a slang term that is familiar to them, in order that they can understand a point. An example is "Glory Grabber" to describe the person who fails to give credit when due and "Empire Builder" for the overly ambitious "out for himself" person. They know what you mean when you say "apple polisher."

If a member of the conference uses a word whose meaning is general, ask him "Just what do you mean," or "In what way would this apply?"

Physical Set-Up for a Conference

The physical set-up is an important factor in the success or failure of a conference. A man must be in a relaxed mood, free from distractions if he is going to concentrate his attention on the solution of a problem under discussion. The more intimate the arrangement, the more likely the chance for a successful meeting.

The best leader cannot be successful in a room where men are distracted by ringing telephones, outside noises, traffic through the room or in a place so large that they are unable to hear discussion or read the charts. Men work best in familiar surroundings. Working foremen will not be at ease in the walnut panelled office of a large corporation. Neither will they be comfortable if they are subjected to the gaze of curious passersby. Some degree of privacy is essential.

Conferences are frequently held in branch offices, hotel rooms, etc., that have no facilities for charting. Hotels will provide blackboards and easels for holding them if requested. The usual procedure is to request the Convention Officer or the Housekeeper to provide two or three blackboards. At the same time arrangements can be made to place the tables in the desired pattern.

Arrangement of Tables

Experience has shown that the most satisfactory arrangement of tables is some form of the "U" or "T". The exact arrangement will depend upon the space available. The "U" or "T" arrangements have the advantage of good visibility, a more intimate group feeling, and they allow the freedom of movement by the leader that is necessary for control. A group member will talk better if he can look directly at the person addressed and make himself heard without the necessity of raising his voice.

Condensed Specifications

Blackboard—approximately 60 square feet. Eraser and chalk.

Charts (if used)—newsprint 24" x 33". Crayon in black or colors.

Tables—"U" shaped arrangement preferred.

Chairs—spaced to a minimum of 2'3" center-to-center, constructed wide enough and strong enough to accommodate grown men. No narrow recessed slatted folding chairs should be used.

Ventilation—adequate to provide sufficient flow of fresh air and to clear room of smoke.

Illumination—adequate to provide sufficient lighting to read and placed at the proper angle to avoid reflection and glare on the blackboard or chart.

Charting on Newsprint

Where no blackboards are available the charting is done on ordinary wrapping paper or blank newsprint paper (24" x 33" long) using a bowling alley crayon in black or colors. The paper is held to the wall with Scotch tape. When filled, the paper is removed and placed in a nearby convenient place.

Some leaders lay several sheets of the paper in a pile on the table. They move each top down approximately 1½". Then they run a strip of Scotch tape down across the tops on each side. The several sheets are then held on the wall with the tape. When one sheet is filled it can be cut off without disturbing the remaining sheets. This method is also good when the finished sheet can be folded over the wall or board.

It is not essential to have elaborate equipment for impromptu conferences. Some very good ones have been held where a table was stood on end to serve as backing for the newsprint charts.

Chairs—Anyone who has had to sit for several hours on a narrow hard chair can sympathize with the plight of a thin man forced to sit through a conference on a small undertaker's folding chair. His physical discomfort drives all other considerations from his mind.

Any permanent conference set-up should include comfortable chairs, large enough to accommodate the bulk of a working foreman and support his weight when he tilts the chair back. Loose-jointed squeaky chairs provide prime distraction in any discussion set-up.

Chairs should be spaced far enough apart to allow some freedom of movement by the members. A center-to-center spacing of 2'3" is a minimum.

Provision for Smoking—Experience has shown that conferences should be held where men are free to smoke if

they wish. Ash trays should be provided in sufficient numbers to prevent spilling ashes on the table.

Ventilation—A sufficient supply of fresh air should be provided to clear away smoke and dead air. Close, hot, dead air makes men sleepy and sluggish. Cold drafty rooms make them restless. The leader should watch for these reactions and ventilate the room accordingly. Call a recess and open all the windows to clear the room if ventilation is inadequate. Tallow candles burned in a smoke filled room are said to help clear the atmosphere.

Lighting—Two common defects in lighting are evident in many conference rooms. The blackboard is not sufficiently illuminated in some instances, but more often the light strikes the board at an angle that causes reflection and glare. When this condition exists members cannot read the chart.

A second defect is where the general illumination is not sufficient to allow the leader or members to read their notes.

The leader should check the illumination of the blackboard before the conference and remedy the defect if possible.

Methods of Identification

Experience has shown that identification of group members tends to relieve the feeling of strangeness. The first step in a conference is to acquaint the members with each other. The use of first names is advisable to promote an informal atmosphere.

Method 1.

The group leader sketches the table arrangement on a sheet of wrapping paper or newsprint. On the sketch he locates the group members by first and last names and position held. The sheet is placed in some convenient space during the remainder of the conference.

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Food Committees Chosen by I.I.T.

Committees on curriculum, food acceptability, and research have been organized by the 27-man industry advisory council for the food technology program at Illinois Institute of Technology, it was announced today by Milton E. Parker, professor in charge and secretary of the council.

Committee chairmen named by Dr. R. C. Newton, chairman of the council and vice president of Swift and Company, are:

Curriculum—Dr. Henry R. Kraybill, director of research and education of the American Meat Institute Foundation, Chicago.

Food acceptability—Colonel Roland A. Iskher, secretary, Associates Food and Container Institute, Chicago.

Research—Dr. Paul D. V. Manning, vice president, International Minerals and Chemical Corporation, Chicago.

A meeting of the research committee will be held on the Illinois Tech campus December 15.

There are many variations of this method.

Each member of the group copies the sketch on a sheet of note paper for his individual record and reference.

Method 2.

Each member is furnished a 5" x 8" card folded in an inverted V on the 8" length. He letters his name on both sides of the card. Below his name he places the first name or nickname by which he prefers to be called.

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SEISMIC EXPLORATION METHOD

Developed by Former Chicagoan Shows Promise of Lower Costs In Search for Petroleum Sources

A new method of seismic oil exploration has been developed by Dr. Thomas C. Poulter, former Associate Director of Armour Research Foundation. The Institute of Inventive Research of San Antonio is sponsor of the project.

Emphasizing that the research program has not been completed, Dr. Poulter explains that his method in one form employs a pattern of small, specially shaped charges of explosive compositions which are detonated above the ground as contrasted with conventional methods of firing a single, large charge in a shot hole at various depths beneath the surface.

The new method was developed under the sponsorship of the Institute of Inventive Research, a non-profit public service organization endowed by Mr. Tom Slick, Texas oil producer and rancher, to provide assistance for inventors. Dr. Poulter presented his plan to the Institute during the summer of 1947 and the initial portion of the experimental work was carried out under an agreement between the Institute and Armour Research Foundation of Chicago, whereby Dr. Poulter, at that time a member of Armour's scientific staff, conducted the research.

Economical Method

"After a long period of continuous field work and research," President Harold Vagtborg of the Institute declares, "it appears that Dr. Poulter's method will provide a more economical and improved means of exploration to aid in the search for underground petroleum reserves for which there exists a national and international need. Dr. Vagtborg was formerly executive director of Armour.

"As seen by the Institute staff," Dr. Vagtborg continues, "the principal advantages of the Poulter method over those currently in use are that it will eliminate the drilling of shot holes and

their attendant costs, and permit greater speed in the seismic mapping of given areas. In addition, it may allow seismic exploration in areas presently not suited to it, as well as operations over water without loss of marine life."

Relating that his first work along this line was carried out in the Antarctic while he was second in command and scientific advisor of the Byrd Antarctic Expedition of 1933-35, Dr. Poulter says the above-ground explosion method has been tested and checked against records obtained by conventional methods in both proved and unproved areas of Texas, Oklahoma and elsewhere.

Describing his procedure, Dr. Poulter explains that the charges in the explosive pattern are set up on stakes relatively close to the ground and spread in a hexagonal design of 7, 13, or 19 points, with one in the center, over a selected location. Depending on the type of records sought, he continued, comparatively light charges are placed from five to 85 feet apart and detonated simultaneously.

Tests have shown the above-ground explosion method, on which patents have been applied for, does not incur the risks of the shot hole method as regards damaging nearby structures of concrete or other solid material. It also eliminates the danger of falling stones. The Poulter method, however, produces a louder explosion than the shot hole method, although its concussion effect is almost negligible.

The observations below, in Dr. Poulter's own words, are taken from material released by the Institute of Inventive Research.

As is the case with many technical developments today, the idea of producing a seismic wave in the ground by means of an explosion in the air is not new. The development of this method (the Poulter Method) of geophysical seismic explorations, although a direct

outgrowth of our observations in the Antarctic, has involved a great many fundamental studies.

Studies were made of the manner in which the energy from an underground explosion was absorbed and it was found that as much as 85% of the energy may be absorbed within a few feet of the charge through the work done in crushing the rock or other surrounding material. A study was then made of the further absorption of that portion of the energy which is converted into a seismic wave motion in the ground. In order to reduce the problem to its simplest form, studies were made on the transmission of sound on seismic waves through dry sand of a uniform grain size. These tests showed that there is very little absorption if the amplitude or intensity of the sound is very low. In other words, if the intensity is very low, 95% of the energy may be transmitted whereas if the intensity is high, as little as 5% or less may be transmitted.

It was further found that, other things being equal, the larger the particle size, the greater the intensity can be before the absorption becomes excessive. For a mixture of particle sizes such as is found in the weathered layer, the absorption covers a wider intensity range, but in all cases if the amplitude of the wave motion or its intensity is sufficiently low, the seismic waves will be transmitted comparatively well.

Absorption Slowed

In seismic exploration, the term weathered layer has been applied to a layer of the surface of the earth where the particles are not compacted into a solid mass and, as a result, if an explosive charge is buried just beneath the surface, so much of the energy will be absorbed in the weathered layer that there is not enough left to penetrate to the desired strata and reflect back even though the transmission characteristics of the underlying strata may be very good.

This does not mean that if the intensity at a point on the surface of the ground is reduced sufficiently, good records will be obtained. As this energy travels out from a point, its intensity decreases at a rate which is inversely proportionate to the square of the distance from the source. This is in addition to the absorption phenomena mentioned above.

If, however, the wave front is flat instead of spherical, there is no decrease in intensity as a direct result of increasing distance from the source.

One of the most effective ways of minimizing the loss of explosive energy with an accompanying increase in the efficiency of converting it into a seismic wave motion is to detonate the charge in an elastic medium such as air and permit the wave motion to travel a sufficient distance in that elastic medium that the amplitude or intensity has diminished to the point that it will transfer to another medium with only minor loss of energy by absorption. Because the air is so elastic, the total energy in the air wave remains almost constant even after it has traveled for long distances.

Detonates Above Surface

By this (the Poulter) method of exploration, charges are detonated at or above the surface of the earth. This sets up an air wave of very high intensity, but since the air is highly elastic even at such high energy levels, very little absorption occurs. This air wave is allowed to travel far enough through the air so that this energy is spread out over an area large enough that the ground will receive and transmit it with a minimum amount of absorption.

Fortunately the three most important sources of loss of energy encountered by the conventional method are removed by the single expedient of detonating a series of properly arranged charges at or above the surface of the earth.

By detonating the charges in air very little energy is absorbed in the immediate vicinity of the charge.

By applying this energy simultaneously over a relatively large circular area of the earth's surface, the energy per unit of area may be small but the total energy can be made quite large, and the fact that this automatically produces a flat wave front tends to minimize the inverse square loss.

Numerous methods for producing a flat wave front over a large area have been studied and several methods have been developed. One of the methods effectively used was a modification of the Munroe effect, or lined shaped charge, which had proved to be such an effective weapon during the war.

This charge was modified in such a way that instead of producing a long



To aid in locating underground petroleum reserves, Institute of Inventive Research, San Antonio, has developed new method of seismic exploration. Picture shows night explosion of 13-charge detonation covering 120-foot area, with special shaped charges in hexagonal pattern with one in center.

narrow jet, it produced a symmetrical umbrella shaped jet by means of which it was possible to produce an essentially flat wave front 80 feet in diameter. Although good reflections can be obtained in many areas by this method using a single charge, other types of charges, fired either singly or in multiples, have been found to be more convenient in actual field operation.

If a flat circular charge of high velocity explosives is suspended several feet above the surface of the earth and in a horizontal plane, and this charge is detonated from the center, it will produce an essentially flat wave front over a circular area more than a thousand times the area of the charge.

These charges can be fired singly or in multiples of uniformly shaped charges depending upon the difficulty or ease with which energy is transmitted through the weathered layer and the characteristics of the substrata.

Because of the velocity at which this wave front travels it is necessary that all of the charges be detonated within an elapsed time of not more than one-tenth of a second. Several methods of doing this have been worked out whereby either the standard seismic caps can be utilized by using a modified or different type of blasting machine,

or by using the standard blasting machine and a modified blasting cap.

No modification of any kind is required in the standard seismic equipment, but since no drilling equipment is required, the procedure of operation is made more flexible, the shooting party can work more closely with or even be combined with the surveying party, and if it is found that additional shot points are desirable they can be introduced without the necessity of having each of the three groups return to that point.

Other Advantages

It has another advantage in that several shots can be made at the same shot point to obtain comparable results without the variation that occurs in successive shots in a hole, or the danger of losing the hole completely and having to have the drillers return to drill another hole to be shot at a later date.

Of course the more important advantages of the method are obvious; namely, the saving of the cost of drilling shot holes which in such areas as West Texas will range from \$5,000.00 to \$20,000.00 per month per party. Equally important is the greater rate at which a party can obtain the corresponding or, in some cases, better data.

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Awards Contract For Warehouse

F. W. Woolworth Co. has awarded a contract to the Turner Construction Company for the erection of a warehouse with approximately seven acres of floor space at Archer and Lawndale Avenues, Chicago. It will serve as a distribution center for stores in the midwestern section of the country. The warehouse is on the Indiana Belt Line Railroad.

The building, of structural steel and brick, will be 510 feet by 550 feet, one story high and partial basement. The architects are A. D. Crosett, of New York, and E. F. Quinn, Associated, of Chicago. Construction will begin at once and occupancy is expected in November, 1949. This is the third contract of Turner for the Woolworth Co.

The Turner Construction Company has offices in New York, Chicago, Philadelphia and Boston.

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Fund Drive Opens for

BUILDING RESEARCH BOARD

A fund-raising drive for the Building Research Advisory Board is currently being conducted by the Research Activities Committee of the Construction Industry Advisory Council.

Raymond J. Ashton of Salt Lake City, Utah, past president of the American Institute of Architects, is chairman of the committee.

The Building Research Advisory Board has been established as a new agency of the National Research Council, the administrative arm of the National Academy of Sciences, in response to a request by the Construction Industry Advisory Council. Dr. Frank B. Jewett, research authority, has agreed to act as chairman.

The Industry Council, set up by the National Chamber, is composed of more than 100 trade and professional associations with a major interest in construction.

The objective of the Building Research Advisory Board is to collect, correlate, and disseminate the results of the many separate research studies now being conducted in the field of building construction by contractors and builders, producers of materials and equipment, trade associations, universities, governmental agencies, and others. Its initial program is set up on a five-year basis at a minimum cost of \$100,000 a year.

An analysis of the possibilities and problems of organized research in the improvement of the building art was given recently at the annual fall meeting of The Producers' Council by C. F. Rassweiler, vice-president for research and development of the Johns-Manville Corporation. In urging the prompt effectuation of the Building Research Advisory Board, Mr. Rassweiler said:

"It is obvious that research in the construction industry needs clear-cut, broad objectives; coordinated activity; and some means for facilitating practical utilization of the results secured. The Building Research Advisory Board is an attempt to achieve these objectives by organizing, on a national scale, an impartial board of scientists and businessmen who will attempt to collect and distribute the information which should make the achievement of these objectives possible . . . The setting up and

activating of such an agency is an obvious and vital essential to maximum effectiveness of research activity in this field. It is important that the collection of the funds necessary to activate this board be pushed with all possible speed."

The wisdom of the industry's decision to set up a correlating body under qualified, disinterested direction is further confirmed by a recent action by Raymond M. Foley, Housing and Home Finance Administrator. Mr. Foley has turned to the National Academy of Sciences for advice in carrying out the recent directive of Congress, as expressed in the housing bill passed during the special session last summer, to conduct technical research and studies to develop and promote the acceptance and application of standardized building codes and of standardized dimensions and methods of assembly of home-building materials and equipment.

All elements of the building industry, including contractors and home builders, producers and distributors of materials and equipment, architects and engineers, and financial agencies, are being asked to subscribe to the fund necessary to initiate the five-year research program. A new pamphlet outlining the proposal in question-and-answer form has just been printed. Copies may be obtained from the Research Activities Committee, 1615 H Street, N.W., Washington 6, D.C.

ROAD SPEEDS

Car speeds on main rural roads last year averaged 46.8 miles an hour, the U. S. Public Roads Administration reports. Prewar, the average was 47.1 miles an hour.

With many slow prewar trucks now off the roads, trucks averaged 42.2 miles an hour — 1.8 miles faster than prewar.

The decrease in average car speeds, points out the American Automobile Association, means better gasoline mileage for the average car. Studies by the U. S. Bureau of Standards show that the average car gets 21 miles per gallon at 20 miles an hour, 16 at 40 miles an hour, 11 at 60 miles an hour, and 8 at 80 miles an hour.

MAJOR UNION PROBLEMS

A labor leader's life these days is no taffy pull, if you take the word of the president of Chicago's largest AF of L local.

What with communists and malcontents in his own ranks a union leader is hard pressed to keep from becoming an ex-union leader, says M. F. Darling, president of Local 1031, which numbers 16,000 members of the International Brotherhood of Electrical Workers.

In an article written to explain what a labor leader does with his time, published in the November issue of Commerce magazine, Darling came out swinging at four major causes of industrial unrest.

To play opposite communist and malcontent in the modern labor drama, Darling casts a few employers acting like "rugged individualists who insist on running their businesses as they please."

The fourth role he assigned to lawyers, whom he would like to drop from the cast. He termed the net results of their work a contract which is "a legalistic booby trap."

The plot becomes a series of grievances which a union agent spends ninety per cent of his time unraveling, Darling alleges.

Darling is a veteran labor official who has been in union activity 15 years and who has held his present post since 1937. His office at 5243 West Madison Street is headquarters for the 16,000 electrical union members who work in 43 Chicago plants in the radio and television industry. The industry itself has its greatest concentration in the Chicago industrial area.

Disputes are unavoidable in so vast a labor-management relationship, Darling observes.

"It is impossible to throw 16,000 workers together with management supervisors and not have disputes. As a matter of fact, nine-tenths of a union leader's time, month in and month out, is spent working out grievance settlements."

How do grievances arise?

"Part of the reason," Darling says, "is the feeling on the part of workers that they need not be subject to arbi-

trary and capricious acts by foremen and supervisors."

Part also is the feeling of management that various decisions are its prerogatives to be enjoyed without union permission, he explained.

Some of the workers are looking for trouble, Darling admitted, because they are communists or because they are unreasonably dissatisfied. The communists are easier to handle, he said, by various devices that draw large numbers of members to the union meetings and so prevent minority disturbers from capturing the meeting or drawing it out past the closing hour.

"Malcontents are thorny," Darling stated, because they either charge the union officials with "selling out" the workers or insist that since the employer agreed to the union demand for an increase, the negotiators should have demanded even more!

The union has disciplined members on occasion, when they asked for more than they are willing to return in production, Darling disclosed.

"We have no room in any of our plants for the selfish few who want to milk the cow without also seeing that the cow gets fed," he declared.

To the majority of employers with whom his union deals, Darling was complimentary. A few he characterized as "high-handed" in their dealings with labor.

"By and large," Darling said, "the radio and television employers in Chicago have been fair. Of course, there are always a few rugged individualists who insist on running their businesses as they please, without regard for employee or union opinion, and who balk at accepting any suggestions but their own.

"They will high-handedly make changes in grievance procedure, announce new seniority rules or new layoff rules on their bulletin boards, make unilateral interpretations of contract procedures, and generally operate as if the union never existed, or if it does exist it exists by sufferance alone and its stay upon this earthly scene is temporary.

"These are the employers who give

Institute Forms Chicago Section

Chicago area members of the Institute of Aeronautical Sciences met November 16 to form a Chicago section of the organization.

Chairman of the organization steering committee is H. V. Hawkins, professor of civil engineering at Illinois Institute of Technology, where the first session was held.

Dr. C. C. Furnass, director of the Cornell Aeronautical Laboratory, Inc., Buffalo, N. Y., spoke on "Future Trends in Aviation." S. Paul Johnson, director of IAS, New York City, represented the national office.

Members of the steering committee, all of Chicago, in addition to Hawkins, are:

K. L. Burroughs, vice president of Aeronautical University; Carl F. Eck, safety engineer, Airlines Pilots Association; Dr. H. L. Hull, associate director, Argonne National Laboratory; W. A. Klikoff, superintendent, Aircraft Branch, Civil Aeronautics Authority; R. H. Wendt, chemical engineer in the Aeronautical Division of Globe Corporation; Prof. R. S. Hartenburg of Northwestern University; R. S. Urquhart, Ordnance Research Division, University of Chicago, and F. A. Rappleyea, chemical engineer, Hubbard Spool Company.

the unions the most headaches, partly because they have no sense of compromise.

"Other than this handful, the managements of most radio and television plants in Chicago act like responsible individuals; they bargain sincerely and follow their contracts when once agreed upon."

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NEW DEVELOPMENTS IN WOOD USES

New developments in the uses of wood, and problems facing the wood industries, engaged the attention of engineers, manufacturers and top men in forest products laboratories throughout the country at the Wood Industries Conference of The American Society of Mechanical Engineers which convened in High Point, N. C. on Thursday, October 14.

Speakers included D. E. Henderson, head of the department of industrial engineering of the University of North Carolina at Raleigh, speaking on "Woodworking Education in the South," F. J. Hanrahan of the National Lumber Manufacturers' Association, Washington, D.C., chairman of the wood industries division of the ASME, J. T. Ryan, executive secretary of the Southern Furniture Manufacturers Association, High Point, and H. A. Foscue, its vice president.

A symposium on woodworking research, featuring two Midwesterners, stressed the need for product research looking toward the ultimate goal of wood industries men, utilization of the entire tree.

Research Justified

The combined attack of all those engaged in research on wood problems "is far from adequate," according to George M. Hunt, director of the U. S. Forest Products Laboratory at Madison, Wisc. "The problems are sufficiently important and varied and the possible financial gain to the country so great as to justify several times the total number now engaged in forest products research. Both government and private research in forest products should be expanded.

"The laboratory at Madison, with a staff of 400 and with excellent physical, engineering, chemical and industrial equipment, is primarily concerned with increasing the efficiency and completeness of wood utilization on a nationwide scale," he said. Numerous others are engaged in research in state and university laboratories, private and commercial laboratories and those maintained by trade associations.

"One of the difficult problems of a

research institution such as the Forest Products Laboratory is to get the results of its research put to use," Mr. Hunt declared. "If the Forest Products Laboratory publishes the essentials of good seasoning practice, the only plants that will benefit are those that apply the information to their own operations.

Wood Sugar Process

"Another example is the progress made by the laboratory in the last two or three years in the manufacture of wood sugars from wood waste. This may have enormous potential benefits to the nation, but they will not be attained until plants are built and the process is put to use."

The gap between research findings and their industrial application "should be as narrow as possible," Mr. Hunt asserted. As a partial means of narrowing this gap, a Forest Utilization Service has been set up at seven Forest Experiment Stations throughout the country. Others are planned when funds are available.

Calling for more research by wood-using plants, Mr. Hunt stated that "no company in the business of making or using wood products should be content to live without some attempt to profit by research." Management must be receptive to new ideas and not content to believe that "the old way is good enough."

Machine Problems

Armin Elmendorf, president of The Elmendorf Corp., Chicago, speaking on the private commercial laboratory, called attention to important machined problems of the forest products laboratory, among them:

Means of distending wood to give it new physical properties, to make it flexible and to reduce expansion; means of surfacing wood other than the conventional planer and sanding machine, to give it a superior surface prior to finishing; means for reducing certain types of wood waste to the condition of fine excelsior-like fibres; and a rapid method for fibrelizing or hydrating wood fibres to give them binding properties.

"By converting wood waste into new forms through new mechanical means, the lumber and plywood industries can make great strides toward the complete utilization of the entire tree," Mr. Elmendorf said. "This will result in a great increase in the production of new types of wallboards and synthetic lumber and some of these boards will be superior in many respects to ordinary lumber. The development of such machinery and processes is one of the functions that belongs to the independent research laboratory."

The field of product research, covering methods of fabrication and new tools in the industry is "wide open" asserted C. D. Dosker, president of Gamble Brothers, Inc. of Louisville, speaking on "A Small Manufacturer's Privately Owned Laboratory." He said that "many new facts that are known about wood are still lying dormant because somewhere someone who can use this information has been asleep on the job, and an 'imagineer' is needed to tie process and product into a new or improved product. . ."

"A large proportion of consumer goods produced in the United States uses wood as a basic raw material. It is important to recognize that most of these articles which are currently produced from wood are craft products, and as such are being manufactured today by methods and techniques originated hundreds of years ago."

Professor Nelson C. Brown, of the New York State College of Forestry, Syracuse University, discussing the school laboratory, cited the pioneer work done at Syracuse, in training men for the wood-using industries, such as lumber, furniture, and cabinet making. Its program was inaugurated in 1914, and more recently its work in forest utilization has been emulated by a number of forestry schools. As a state institution Syracuse first operated with \$35,000, but today has more than \$1,000,000 to support this work.

Carl A. Rishell, director of research for the Timber Engineering Co., Washington, D.C., another symposium speaker, described this firm's laboratory.

Charles Ellet Award

Members of the Junior Division are urged to consider competing for the annual Charles Ellet Award, and to notify the Junior Division Program Committee immediately of their intention.

Competitive papers for this award will be presented orally before the WSE membership in the WSE headquarters, Thursday, February 3, 1949. The winning contestant will later be formally presented with the Charles Ellet Award at the annual WSE dinner meeting to be held on Monday, June 6, 1949.

The award was established in 1929 by a gift from E. C. Shuman, a Junior member, who suggested the name "Charles Ellet Award" as a memorial to a courageous young engineer of Civil War days. A silver loving cup with each recipient's name and alma mater engraved, is presented to the winner, and is kept on display in the Society headquarters. As evidence of the honor, the winner receives an engraved certificate and an award of \$25.00.

The award is made annually to a Junior member who, in the opinion of

a committee of awards, is adjudged to have excelled in the preparation and presentation of a semi-technical paper presented in competition for this award at a meeting of the Junior Engineers.

The paper should present a lay-treatment of a semi-technical subject. Objective, but complete, coverage rather than complex formulae and derivations is desired.

There is no restriction or limitation on the choice of subject for this paper. Judging, however, will be performed by a 5-man award committee giving equal weight to each of the following five (5) points:

- (1) Timeliness of the subject.
- (2) Engineering application of the subject.
- (3) Knowledge of the subject.
- (4) Preparation of the paper.
- (5) Presentation of the paper.

The paper should be typewritten, double spaced, less than 2000 words and submitted in triplicate to the Charles Ellet Award Committee not later than January 10, 1949. Although submitted in writing, the paper must

be presented orally, and not read verbatim, at the competitive meeting. Charts, diagrams or other visual aids which assist in the presentation of the subject should, of course, be used wherever necessary and should be incorporated in both the manuscript and the oral presentation.

It should be noted that the contestant will be judged both on the written paper and the oral delivery.

The winning paper, and those of special interest to the membership will be presented in the MIDWEST ENGINEER at a later date.

All Junior members (28 years of age and under) are urged to file notice with the secretary's office and prepare a paper for this competition. Intention to compete for this award should be forwarded to the Junior Division Program Committee not later than December 5, 1948, so as to facilitate necessary publicity and scheduling for the competitive meeting February 3, 1949.

Further inquiries concerning the Charles Ellet Award will be welcomed at the Society Headquarters.

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A. I. E. E.

**American Institute of
Electrical Engineers**

The American Institute of Electrical Engineers, Chicago Section, has two technical meetings scheduled for December.

December 9—Power Group

The Power Group will hold a technical meeting Thursday, December 9, at 7 p.m. E. T. B. Gross is the chairman of the meeting, to be held in the WSE auditorium, 84 E. Randolph St.

Subject of the Technical meeting is "Galloping Conductors on Overhead Electrical Lines", and speakers will be M. S. Oldacre, Director of Research, Utilities Research Commission of the Edison Group of Companies; F. E. Andrews, Engineer, Electric Transmission and Distribution Design, Public Service Company of Northern Illinois; and C. Becker, Testing Department, Public Service Company of Northern Illinois.

"Galloping conductors" is one of the names given to the severe oscillation of overhead line conductors usually occurring when sleet has formed on the wires. In some cases, the galloping is severe enough to cause the conductors to contact one another with a resultant outage and possible burndown or breaking of the wires and maybe the supporting structures.

Mr. Oldacre has been associated with the Edison Company for many years and is now engaged in carrying on research for the group of Edison Companies. He will outline the general problem which is the basis of a research project sponsored by the Utilities Research Commission.

Mr. Andrews has been engaged in transmission and distribution systems design for many years. He will discuss in detail the engineering and operating phases of the problem; what it means to the utility, and the possible effects on design if the trouble is to be of minimum effect.

Mr. Becker is the Chief Chemist for the Testing Department of the Public Service Company. He is the author of two papers on the subject which were presented, one in 1947 to AIEE at Montreal, and the other to the Congress for Study of Large Electrical High Tension Systems held in Paris in June 1948. He has been actively engaged in this project including tests on an experimental line which has been made to gallop by artificial means.

A moving picture of the experimental work will be shown and explained by Mr. Becker as well as actual galloping of lines.

The Pre-meeting Dinner will be held at the Stevens Building Restaurant, 8th Floor, 17 N. State St., at 5:45 p.m. There is no minimum charge. Reservations will be accepted up to December 8 by Mrs. L. Hess, Secretary, CA lumet 5-9600, Ext. 441.

The Pre-meeting Movie will start at 6:30 p.m. Subject will be "Mechanized Clearing of the Right of Way of High Voltage Lines" by the Asplundh Tree Expert Co.

December 16—Basic Science Group

The Basic Science Group of AIEE will sponsor a technical meeting on December 16 at 7 p.m. in the WSE headquarters. K. W. Miller is chairman. The subject will be "Principal Principles of Electron Tubes." Dr. R. Adler, Research Engineer, Zenith Radio Corporation, will be the speaker.

Subject of the Pre-meeting Movie at 6:30 p.m. will be announced later.

Later dates assigned for meetings of the American Institute of Electrical Engineers are:

1949

January 6, January 13, January 20, February 10, February 17, February 24, March 3, March 10, March 24, March 31, April 14, April 28.

A.I.E.E. Educational Program

The 1948-49 Educational Program, sponsored by the Chicago Section of the American Institute of Electrical Engineers, began October 12 at Western Society headquarters. Offered primarily for the professional engineer, these courses are being given this year as a result of enthusiastic acceptance of the 1947-48 schedule of courses.

The final course in this year's series begins December 8 and is described below.

COURSE NO. 4

REPORT WRITING

Eight Sessions

An eight-week course dealing in the functions, forms, content, and preparation of the various types of reports. This course will be presented immediately following the conclusion of the Business English and Letter Writing course. Mr. R. C. Gerfen, also a member of the faculty of Northwestern University will be the instructor. Mr. Gerfen worked with Mr. Clarkson in the presentation of the combined Correspondence and Report Writing course given last spring.

Time: Wednesday evening, 7 to 9 p.m., December 8 to January 26, inclusive.

Place: Western Society headquarters, 84 East Randolph Street.

Cut off and mail with enrollment fee to:

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These items are from information furnished by the Engineering Societies Personnel Service, Inc., Chicago. This SERVICE, operated on a co-operative, non-profit basis, is sponsored by the Western Society of Engineers and the national societies of Civil, Electrical, Mechanical and Mining and Metallurgical Engineers. Apply to ESPS, Chicago and the key number indicated, including postage to cover forwarding and return of application. If placed in a position as a result of a Men Available or Position Available advertisement, applicants agree to pay the established placement fee. These rates are available on request and are sufficient to maintain an effective non-profit personnel service. Prepared MEN AVAILABLE advertisements limited to 35 words, with typed resume attached may be submitted to ESPS Chicago by members of Western Society of Engineers at no charge. A weekly bulletin of positions open is available to subscribers. Apply ESPS Chicago.

MEN AVAILABLE

FACTORY MANAGER-SUPERINTENDENT, 43, 20 years' experience metal working, deep draw, stamping, steel rolling, gears and transmissions. Industrial and management engineering, quality control, tooling, machine and equipment design. Presently employed. Chicago area preferred. 9-W

PLANT ENGINEER-MASTER MECHANIC, 48, 25 years' experience hydraulic, electrical and mechanical machinery and equipment specification, selection, installation, operation, maintenance, re-design. Machinist, tooling, production, planning and electrician background. Presently employed. Locate anywhere except East coast. 10-W

CHEMICAL ENGINEER, 41, 20 years' experience research, design, development, patents, production of chemical systems for oil refining, water, sugar, paper, sewerage and food processing. Administrative, operation and practice. Presently employed. Chicago area preferred. 11-W

MECHANICAL ENGINEER, 27, 3 years' experience, industrial plant design, estimating and construction, boiler design, drafting and installation, industrial stationary engineer. Graduate mechanical engineer upper half of class. Chicago preferred. 12-W

CONSTRUCTION ENGINEER, 53, 30 years' experience, construction supervision oil refinery, boiler house and piping; design and maintenance food processing plant, pumps, blowers, mixers and machinery; re-design and maintenance, head refinery equipment, blast and rotary furnaces. Presently employed. Prefer south, will re-locate. 13-W

SALES MANAGER, Electrical and Mechanical engineer, 42, extensive experience industrial sales, training sales crew, advertising, promotion, manuals, visuals and publishing. Presently employed. Chicago area preferred. \$15,000. 14-W

POSITIONS AVAILABLE

TIME STUDY SUPERVISOR, mechanical engineering background, to 48, experienced time study on punch presses, welding and assembly operations, connection with sheet metal fabrications, knowledge labor negotiations. Head up time study for long established company manufacturing domestic ranges. Salary \$6,000. Location: Midwest. R-5310

MIDWEST ENGINEER

POSITIONS AVAILABLE

DESIGNER, structural experience concrete and steel. Work on power plant, industrial or commercial design. Salary: Open. Location: Chicago. R-5333

SAFETY ENGINEER, engineering education, 30-45; well grounded safety regulations and requirements, speak and write well. Will head up safety program in steel fabricating plant with 10 branches. Required travel approximately 50%, Chicago resident. Salary approximately \$5000. Location: Chicago headquarters. R-5322

PACKAGE ENGINEER, 27-35, experienced in developing packaging and crating for general lines of merchandise. Background as successful sales representative for box company would be desirable. Salary \$5,000-\$6,000. R-5323

DESIGNERS (2) around 26 years, recent graduates, good draftsmen. Engage in tool design and specifications on small and medium tools and jigs for a company engaged in manufacture of steel windows, screening and building supplies. Start on board and be required to develop rapidly. \$275-\$300. Location: Chicago. R-5326

MECHANICAL AND STRUCTURAL ENGINEER, 1 each, past 50, broad experience as designers, act as blueprint reviewer or checker, check blueprints and locate errors in dimensions on drawings, go through designs and drawings and make them workable. \$2.25-\$3 hour. Location: West side of Chicago. R-5327

DESIGNER, machinery, 30-40. Experienced tool and die design and making, wire forming machinery, mass production and design in automobile plants. Work with superintendent and take over department. Salary \$450 to \$500 per month. Location: Northern Illinois. R-5328

ASSISTANT CHIEF ENGINEER, graduate Mechanical Engineer, 40, experienced design high speed automatic heavy equipment, engineering administrative training, potential chief engineer. Well established manufacturing company. Salary \$10,000. Location: Chicago. R-5313

POSITIONS AVAILABLE

CHIEF ENGINEER, graduate Mechanical Engineer around 35, 10 years' experience shop production, practical design ideas, machinery construction with light manufacturing. Knowledge shop and tube mill process, methods, operation, equipment and administration on light tubular structures, frames, light metal, bearing, gears, plastic and plated accessories. Familiar with butt welding, electric induction brazing, punch press shearing for a light vehicle manufacturer. Salary \$8,000 to \$10,000. Location: Chicago. R-5315

PLANT ENGINEER, graduate Mechanical Engineer, 30 to 40, experienced maintaining equipment in boiler house, paper corrugating machinery, conveyors, pneumatic systems, machine shop and building. Short training period in company and machinery manufacturers' plants. Charge of maintenance, Chicago plant. Train mechanics and develop improved operating and maintenance practices and mechanical devices. \$5,000 plus. Location: Chicago. R-5306

SALES ENGINEER (District Manager), 35-40; experienced sales and engineering in power transmission. Sell power transmissions, fill district manager's position and qualify for top position in sales. Salary: Open. Location: Indiana. R-5276

RESEARCH ENGINEER, Master's metallurgical, 25-32; 1 year welding research. Study weld stress, effects on structures and properties of welded metals, assist in refinery welding problems. Salary: Open. Location: Chicago. R-5130 M-6

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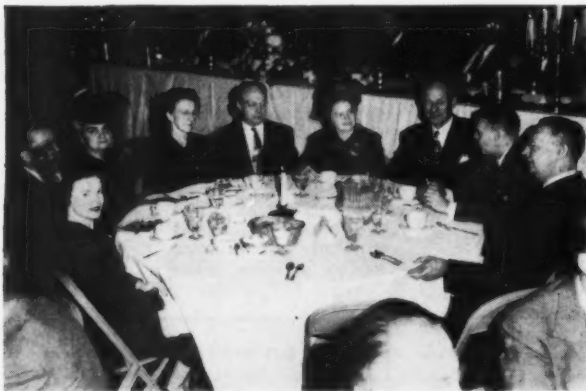
CHICAGO 6

CIVIL ENGINEERS AND
GENERAL CONTRACTORS

Annual Fall Dinner



Panoramic view of the Annual Fall Dinner of Western Society of Engineers, held November 25 in the Furniture Club of America.



Left to right: Mrs. W. McClurg, William McClurg, Mrs. V. O. McClurg, Mrs. J. F. Parmer, J. F. Parmer, Mrs. H. T. Heald, E. Gordon Fox, Paul L. Sayre, and C. G. Bigelow.



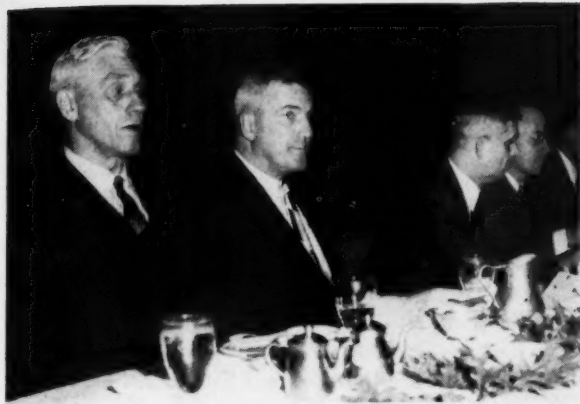
Left to right: Ed J. Slygh, Miss Georgianna H. Peeney, Miss Clara E. Lawrence, Mrs. Edith Bradfield McCabe, Miss Iris Ashwell, J. T. Glick, R. O. Merrill, Mrs. Dorothy Merrill, and Miss Mary Ann Crawford.



General view of the WSE members and guests.



Left to right: T. C. Noonan, Mrs. D. V. Steger, George E. Pfisterer, Wm. B. Ferguson, Franz Schulze, Miss Marie Rochiff, Mrs. W. V. Kahler, Mrs. H. P. Sedwick, and Mrs. T. C. Noonan.



View of the Speakers' Table including left to right, Henry Penn, E. A. Imhoff, Henry T. Heald, Titus G. LeClair.



Another view of the Speakers' Table showing left to right, Verne O. McClurg, Gustav Egloff, H. P. Sedwick, Wilfred Sykes, and John deN. Maccomb.

by Barbarita M. Andrews

The annual Fall Dinner of the Society was held at the Furniture Club of America, on Monday, October 25.

Members of the Society, their wives and guests, numbering 550, were entertained by Robert J. Casey, veteran correspondent and newspaper columnist, as he highlighted humorous aspects of his broad career.

According to our President, Verne O. McClurg, who introduced him, Mr. Casey

was in France until it was overrun, in the Philippines after it was bombed, in the Pacific after Midway, at the scene of the Allied landing in France. In addition to his many other activities, Mr. Casey has twenty published books to his credit.

Remarking that he had planned to talk on engineering, Mr. Casey confided that he couldn't make any snide remarks on the subject and have his electricity working, or his gas connected, or his telephone operating. Going on to his announced subject, "What's Wrong with the World," he said, "Everyone knows—just look at it"; and further, quoting a conversation with a former newspaper employer, "If I knew all the \$64 questions in the world, I definitely wouldn't work here for beans."

Mr. Casey described the Egyptian newspapers as he found them on a visit there, and mentioned one Egyptian's reaction to current events coverage, "I never read papers—they make me feel too sad."

Throwing further light on the journalist's view of the world, he admitted, "No reporter can ever talk economics higher than fifty cents."

Those of us on the other side of the footlights found Mr. Casey thoroughly enjoyable—with an interesting, sudden kind of wit.

On these two pages are photographs of the group attending the dinner, and from all reports everyone had a good time.



Robert J. Casey, the speaker of the evening.

General view of the group at the dinner.



Robert J. Casey, left, talking with Verne O. McClurg.

Another group of Western Society members at the dinner.



Western Society Calendar

Every Monday night is Western Society night at the new WSE headquarters, 84 E. Randolph Street. Members are urged to make it a must on their weekly schedules. Programs begin at 7 p.m., with a rendezvous dinner at the Blackhawk Restaurant at 5:30 p.m. Reservations for dinner should reach Mrs. Brown, Ra 6-1736 by the Friday before each meeting.

The meetings of all Sections and Divisions and of the Civic Committee, for the remainder of the year are as follows:

1948

- December 6 Hydraulic, Sanitary and Municipal Engineering Section
- December 9 Professional Women's Council
- December 13 General meeting sponsored by: Mechanical Engineering and Fire Protection and Safety Engineering Sections
- December 16 Civic Committee

1949

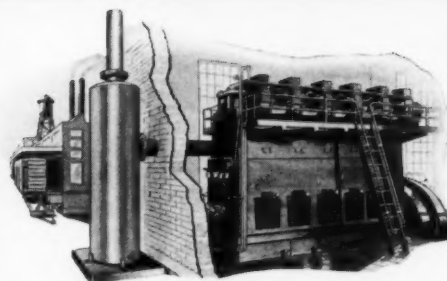
- January 6 Junior Division
- January 10 General meeting sponsored by Electrical Engineering and Communications Engineering Sections
- January 13 Professional Women's Council
- January 17 Traffic Engineering and City Planning Section
- January 20 Civic Committee
- January 24 Transportation Engineering Section
- January 31 Bridge and Structural Section
- February 3 Junior Division, Charles Ellet Papers
- February 7 Fire Protection and Safety Engineering Section
- February 9 Professional Women's Council
- February 10 Civic Committee
- February 14 Electrical Engineering Section
- February 21 Washington Award Dinner (tentative date)
- February 28 Communications Engineering Section
- March 3 Junior Division
- March 7 Gas, Fuels and Combustion Engineering Section
- March 9 Professional Women's Council
- March 10 Civic Committee
- March 14 General meeting sponsored by Bridge and Structural Engineering and Transportation Engineering Section
- March 21 Chemical and Metallurgical Engineering Section
- March 28 Mechanical Engineering Section
- March 31 Civic Committee
- April 4 Hydraulic, Sanitary and Municipal Engineering
- April 7 Junior Division

- April 11 General Meeting sponsored by Chemical and Metallurgical Engineering and Gas, Fuels and Combustion Engineering Sections
- April 13 Professional Women's Council
- April 18 Traffic Engineering and City Planning Section
- April 21 Civic Committee
- April 25 Transportation Engineering Section
- May 2 Fire Protection and Safety Engineering Section
- May 9 Junior Division, General Social Meeting
- May 11 Professional Women's Council
- May (date open) Civic Committee, Dinner meeting
- June 6 Annual meeting

Washington Award

The Washington Award Dinner has been tentatively set by the Washington Award Commission as February 21.

Watch the January issue of MIDWEST ENGINEER for complete details.



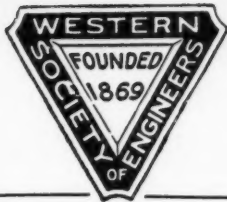
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Western Society Meetings

General Meeting, December 13

"Water Fog—Master of Fire" will be Mr. Fred E. Toensmeier's subject when he speaks before the General Meeting of Western Society, DECEMBER 13, sponsored by the MECHANICAL ENGINEERING AND FIRE PROTECTION AND SAFETY ENGINEERING SECTIONS. Mr. Toensmeier is manager of the Chicago office of Rockwood Sprinkler Company. The meeting will begin at 7 p.m.

A motion picture film, based on the application of water for oil fires, including such fire fighting methods as fog foam and wet water, will be shown and discussed by Mr. Toensmeier. He has been connected with the fire protection industry for 17 years, working in construction, engineering, sales engineering and promotion in the industry. For the past three and a half years he has called on refineries, and oil companies, promoting water fog for special hazards in these fields.

The film has been shown to several large plants, the American Chemical Society, Cook County Inspection Bureau, the Fire Department Training School of Chicago, etc., and is considered a very valuable contribution towards fire protection.

Junior Division, January 6

Edward A. Egan, industrial relations consultant of the firm of Edward A. Egan Industrial Relations Associates, Chicago, will address the JUNIOR SECTION of the Society, Thursday, JANUARY 6 at 7 p.m. at the WSE headquarters. His subject will be "Whither Labor Relations?" Mr. Egan will comment on phases of labor relations which are of current interest.

Long active in the field of industrial relations, Mr. Egan set up his own industrial relations consulting firm in mid-September, 1947. Previously, he was for several years Director of Industrial Relations for the General American Transportation Corporation and all its Divisions. For two years, he was Commissioner of Conciliation of the United States Conciliation Service and member of conciliation panels which processed many of the important wartime labor disputes in the Middle West. Labor Relations Associates of Chicago, Inc., Employers Association of Chicago, Jefferson Electric Company, and Inland Steel Company are his other business associations which involved industrial relations responsibilities.

In his present capacity as industrial relations consultant, Mr. Egan is rendering advisory and representation services



General Meeting, January 13

Dr. Mervin J. Kelly, Executive Vice President of the Bell Telephone Laboratories, will speak before the General Meeting of the Society, sponsored by the Electrical Engineering of the Society, sponsored by the ELECTRICAL ENGINEERING AND COMMUNICATIONS ENGINEERING SECTIONS, JANUARY 10, at 7 p.m.



The speaker has chosen as his subject, "Organized Creative Technology," believing it to be the dominant force in our present day society. Its contributions, organization and methods will be described. He will use examples from his experience at the Bell Telephone Laboratories for illustration.

Dr. Kelly earned his Ph.D. at the University of Chicago in 1918, received the D.Eng. at the University of Missouri in 1936 and the D.Sc. at University of Kentucky in 1946. He is a member of the National Academy of Sciences, and a Fellow of the American Physical Society, American Acoustical Society, Institute of Radio Engineers, and the American Institute of Electrical Engineers.

He has been associated with the Bell System Research and Development activities since 1918. He was Research Physicist from 1918 to 1933, and Director of Research and Development of Electronics and Transmission Instruments from 1933 to 1936. From 1936 to 1944 he was Director of Research of Bell Telephone Laboratories, and has been Executive Vice President since 1944.

Women's Council, December 9



Miss Iris Ashwell, Chief Land Planner for the Chicago Housing Authority, will speak on "City Planning" at a meeting of the Professional Women's Council, December 9 at 7 p.m., at Western Society headquarters.

All WSE members are invited to attend.

to companies and associations in all aspects of labor relations. Through seasoned counsel, industrial relations surveys, and installation of personnel administration programs, he is assisting employers to orient their employee relations policies, practices and procedures, and give them sound and practical effectuation.

All members of the WSE and their friends are invited to this meeting.

WSE Applications

In accordance with the By-laws of the Western Society of Engineers, the following names of applicants are being submitted to the Admissions committee for examination as to their qualifications for admission to membership into the Society in the various grades, i.e., Student, Junior, Member, Associate, etc.

All applicants must meet the highest standards of character and professionalism in order to qualify for admission, and each member of the Society should be alert to his responsibility to assist the Admissions committee in establishing that these standards are met. Any member of the Society, therefore, who has information relative to the qualifications or fitness of any of the applicants listed below, should inform the Secretary's office.

Applications PRESENTED to the Board of Direction at its meeting October 28, 1948.

- 86-80 John H. Potocki, 8844 Muskegon Ave.,—attending Illinois Institute of Technology.
- 87-80 Thaddeus C. Purzycki, 3274 Wrightwood Ave.,—attending Illinois Institute of Technology.
- 88-80 Richard C. Rees, 3231 N. Hamlin Ave.,—attending Illinois Institute of Technology.
- 89-80 James F. Smola, 1804 S. Kenilworth Ave., Berwyn, Ill.,—attending Illinois Institute of Technology.
- 90-80 Harold H. Wiegman, 343 Franklin Ave., River Forest, Ill.,—attending Illinois Institute of Technology.
- 91-80 Stanley Wilczewski, 2303 S. Drake Ave.,—attending Illinois Institute of Technology.
- 92-80 Marvin H. Zelibor, 1904 S. 49th Ave., Cicero, Ill.,—attending Illinois Institute of Technology.
- 93-80 Wollert R. Ellertson, Engr. Draftsman, Sauerman Bros., Inc., 522 S. Clinton St.
- 94-80 L. A. Sepulveda (Trsf.), Mech. Designer, Laramore & Douglass, Inc., 327 S. LaSalle St.
- 95-80 Elker R. Nielsen, Vice Pres., S. N. Nielsen Co., 3059 Augusta Blvd.
- 96-80 James R. Morison, Arch. & Ch. Draftsman, University of Chicago, 956 E. 58th St.
- 97-80 Russell E. Anderson, Vice Pres., Delta-Star Electric Co., 2437 Fulton St.
- 98-80 C. Stuart Beattie, Vice Pres. in Charge Prod. & Engr., Delta-Star Electric Co., 2437 Fulton St.
- 99-80 Voyle R. Dawson, Div. Engrg. Assist., Western Union Telegraph Co., 427 S. LaSalle St.
- 100-80 Fred A. Sharring, Engr., Sauerman Bros., Inc., 522 S. Clinton St.
- 101-80 Frederick C. Zimmerman (Trsf.), Sales Engr., New York Blower Co., 3155 S. Shields Ave.
- 102-80 Peter G. Contos, 4912 N. Washtenaw Ave.,—attending Illinois Institute of Technology.
- 103-80 Edward F. Elenz, 3844 N. Bell Ave.,—attending Illinois Institute of Technology.
- 104-80 Arthur T. Fitzgerald, 1850 S. 61st Ct., Cicero, Ill.,—attending Illinois Institute of Technology.
- 105-80 Roy A. Sundberg, 823 E. 49th St.,—attending Illinois Institute of Technology.
- 106-80 Clarke I. Knudson, Contract Mgr.—Chicago, Turner Construction Co., 105 W. Adams St.
- Applications PRESENTED to the Board of Direction at its meeting November 30, 1948.
- 107-80 Robert W. Olesen, Knollwood, Oak Brook Rd., Hinsdale, Ill., attending Illinois Institute of Technology.
- 108-80 Francis E. Wilson, Engineer, Illinois Bell Telephone Co., 212 W. Washington St.
- 109-80 Frank H. Wells, President, F. H. Wells Consulting Engineers, Inc., 79 W. Monroe St.
- 110-80 Kenneth C. Johnson, 2313 N. Natchez Ave.,—attending Illinois Institute of Technology.
- 111-80 Kenneth M. Hepler, 402 N. Taylor Ave., Oak Park, Ill.,—attending Illinois Institute of Technology.
- 112-80 Arthur D. Larson, 440 E. 144th St., Dolton, Ill.,—attending Illinois Institute of Technology.
- 113-80 Paul A. Melvin, President, Melvin-White, Inc. and Melvin-Brown, Inc., 1111 Crosby St.
- 114-80 Ernest A. Boehm, Asst. Range Sw. Engineer, Soreng Manufacturing Corp., 1901 Clybourn Ave.
- 115-80 Charles A. DeLeuw, Asst. Solenoid Engineer, Soreng Manufacturing Corp., 1901 Clybourn Ave.
- 116-80 Hardin Y. Fisher, Chief Engineer, Soreng Manufacturing Corp., 1901 Clybourn Ave.
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- 118-80 Irving Gebel, Product Engineer, Soreng Manufacturing Corp., 1901 Clybourn Ave.
- 119-80 George D. Johnson, Production Engineer, Soreng Manufacturing Corp., 1901 Clybourn Ave.
- 120-80 David G. Wheeler, Jr., 7915 Indiana Ave.,—attending Illinois Institute of Technology.
- 121-80 Lawrence Margol, 4111 N. Bernard St.,—attending Illinois Institute of Technology.
- 122-80 Otto J. Seidl, 4311 Schubert Ave.,—attending Illinois Institute of Technology.
- 123-80 Roland E. Weber, Fire Protection Engineer, Marsh & McLennan, 231 S. LaSalle St.
- 124-80 Louella H. Kneale, Engineering Assistant, Illinois Bell Telephone Co., 208 W. Washington St.
- 125-80 Robert E. Badger, Assistant Engineer, Hubbard & Company, 5401 W. Hubbard St.
- 126-80 Jack L. Field, Engineer, Illinois Bell Telephone Co., 208 W. Washington St.
- 127-80 John L. Gadzala, 2927 W. 39th Pl.,—attending Illinois Institute of Technology, 3300 Federal St.
- 128-80 Willard O. Kirate, 7713 Blackstone Ave.,—attending Illinois Institute of Technology, 3300 Federal St.
- 129-80 Robert E. O'Neill, 1021 W. 73rd St.,—attending Illinois Institute of Technology, 3300 Federal St.
- 130-80 Stanley J. Ryba, Engineer, Illinois Institute of Technology, 3300 Federal St.
- 131-80 Earl V. Rupp, Engineer, Bastian-Blessing Co., 4201 Peterson Ave.
- 132-80 Wm. J. Benoit, Superintendent & Secretary, Galla-her & Speck, 546 W. Harrison St.
- 133-80 William T. Skene, 908 Madison St., Evanston, Ill.,—attending Illinois Institute of Technology.
- 134-80 Peter Merevich, Telephone Engineer, Illinois Bell Telephone Co., 212 W. Washington St.

Book Reviews

On Subjects of Interest to Engineers

Fundamentals of Industrial Electronic Circuits

By Walter Richter, published by McGraw-Hill Book Co., Inc., New York, 1947, 569 pp., \$4.50.

Frequently the engineer, after years of practice, grows rusty in the theory connected with his work. Then, suddenly, he finds himself confronted with a change or advance in the particular field with which he is familiar.

In the forty years since DeForest added the grid to make the three element vacuum tube, the field of electronics has become extremely complex and diverse, invading every branch of electrical engineering until the uses of the vacuum tube are legion. Yet, the theories as applied to electronics seem strange to an engineer concerned with generating or distributing electrical power. Concepts and methods often must be approached from entirely different angles. To properly orient one's thinking often requires a long course of study.

This book is aptly designed for just such a condition. The necessary mathematics are simplified into elementary algebra and the entire approach is graded to the high school physics level. Yet, in its simplicity, the book does not sacrifice thoroughness and is not to be confused with scientific books written for the "popular" level. The author drew from his past ten years' experience in teaching evening courses on Industrial Electronics at the University of Wisconsin.

The book is well indexed and arranged with practical problems at the end of each chapter. Lists of additional reading and references are carefully selected. Any engineer with occasional concern with electronics can well use this book in his personal library.

J. A. S.,
Member W.S.E.

Production with Safety

By A. L. Dickie, published by McGraw-Hill Book Co., Inc., New York and London, 1947, 242 pp., \$2.50.

Except in our larger industries in which it is well established and effective, accident prevention is generally under the guidance of a single safety engineer. It is obvious that in addition to his technical knowledge, he must have executive ability and diplomacy if he is to be successful.

The author presents this aspect of safety in production by a most interesting human relationship story in dialogue form, interwoven with the details of standard practices. It starts with the employment of a qualified safety engineer by the management of a medium size industry, establishes his responsibilities and limitations, introduces the department heads and foremen, the insurance expert, members of the personnel and medical department and representatives of the employees, and fits them into the project of safety in production.

The language of the foremen's meetings and other conferences is typical, blunt and not retouched. Numerous

controversial subjects are discussed, emphasis being directed to the fact that success in a safety project is dependent upon the combined efforts of management and foremen under the general direction of the safety engineer.

The book particularly stresses the economic need of preventing accidents to machines and materials and the indirect cost of accidents which is several times the direct cost.

The student and practicing safety engineer will benefit from the excellent lessons in diplomacy, and the numerous engineers otherwise associated with our industries will get a broader understanding of the part they must play in an accident prevention program.

E. B.,
Member W.S.E.

Soil Mechanics

By Dimitri P. Krynine, Consulting Engineer, published by McGraw-Hill Book Co., Inc., New York, 1947, 511 pp., \$5.50.

The author, in his preface, states that foundations of structures and structures made of earth material are as old as human civilization itself. Most of the principles controlling their construction and behavior have been known for centuries, but these principles have been completed, crystallized and put together only in the past twenty or twenty-five years, to form a branch of engineering knowledge termed "Soil Mechanics".

An earth mass is visualized in soil mechanics as an actual physical body; hence the necessity of studying its physical properties. This is done in Part One of this book which has three chapters, as follows: I, Origin and General Characteristics of Soils; II, Soil Moisture, Soil Plasticity and Consistency; III, Seepage Phenomena and Frost Action in Soils.

The discussion of stresses and strains in earth masses, both idealized and actual, is taken up in Part Two, "Elements of the Mechanics of Earth Masses". It deals with stresses in earth masses caused by direct loading, friction and cohesion, shear tests, plastic flow, the theory of consolidation, together with a general discussion and review of Parts One and Two.

Part Three is devoted to the engineering use of the principles advanced in Parts One and Two, and is entitled "Structural Applications". Chapters on stability of foundations, cuts and embankments, retaining walls and cofferdams are included, as well as pressures on tunnels and conduits, highway and runway subgrades, and settlement of structures.

Appendix A covers the "Wet Mechanical Analysis of Soils"; Appendix B treats of "Vertical Pressure from a Distributed Load"; Appendix C, "Shearing Tests"; and Appendix D, "Theory of Consolidation: Consolidation Test."

The author has included a complete list of references, or bibliography, at the end of each chapter. His book is profusely illustrated, and is a valuable contribution to the science of soil mechanics.

G. J. T.,
Member W.S.E.

Letters

TO THE EDITOR

**The Boise
Boise, Idaho**

October 23, 1948

Many thanks for the copy of the MIDWEST ENGINEER. I congratulate you on the fine setup. It's intensely readable and pleasing to the eye and the articles are worth anyone's reading. To you and your staff and the Publications Committee go a lot of credit.

Sincerely,
ART HOWSON

**Walter T. Curtis
P.O. Box 91
Harrisville, Michigan**

October 29, 1948

Through the kindness of C. W. Brooks, I have been perusing your Vol. 1, No. 1.

Noting the sad look on your Editor's face contemplating empty mail-bag, and noting empty wastebasket, I am prompted to help fill both.

Your publication is fine and should be both interesting and valuable to the modern engineer. It is a far cry ahead of the "Bulletins" of the WSE to which I occasionally contributed when a member 35 years ago back in the days of W. H. Finley, F. H. Bainbridge and Andrews Allen.

Accept congratulations from a retired has-been. More power to the MIDWEST ENGINEER.

Respectfully,
WALTER T. CURTIS

**Electro-Motive Division
General Motors Corporation
LaGrange, Illinois**

November 17, 1948

I have before me a copy of the November issue of MIDWEST ENGINEER. Our congratulations upon an excellent job of coverage of the current railroad motive power situation. We found the issue highly interesting and informative, and we like to think that this was not entirely a matter of being prejudiced because of the space given to discussion of our development of the Diesel Locomotive.

Cordially,
Volney B. Fowler
Assistant to Vice President

November 10, 1948

At the last meeting of the Civic Committee, I neglected to mention a suggestion for the MIDWEST ENGINEER that apparently has occurred to others as well as myself.

I believe that it would be helpful if all announcements of the current month's meetings could be listed on one page, at the front of each issue. If the edge of the page could be perforated or scored, so that the page could be easily removed for bulletin board use, so much the better. The reverse side should either be blank or carry advertising material. As an alternative, the page could be loose rather than bound with the other pages.

I realize that the foregoing probably involves increased costs, but hope that some method can be worked out to make the publication of maximum value to the members of the Society.

Yours very truly,
J. T. GLEICK

Editor's Note:

We have had several requests similar to that of Mr. Gleick requesting some kind of tear sheet upon which would be listed schedules of meetings. You will note in the front of this and future issues of MIDWEST ENGINEER a card which may be torn out and kept before you.

SUBSCRIPTION BLANK

THE WESTERN SOCIETY OF ENGINEERS

To the Development Committee: I desire to contribute the sum of \$_____ toward the expense to be incurred in the expansion program associated with moving our headquarters to the Crerar site, 84 East Randolph Street, on April 1, 1948. My contribution will be:

☐ In full herewith.

☐ In installments as follows:

\$_____ on or before _____

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Signature

Date

Please make checks payable to

The Western Society of Engineers

A Selected Market

The pulling power of advertising media is determined more by the quality of the market reached than by its quantity. We have always contended that the readers of MIDWEST ENGINEER represented a select group—engineers charged with design and recommendation, and management levels.

It is gratifying to find this view shared by our advertisers. To have requests for space come in unsolicited from firms with whom we have had no previous contact, is high commendation indeed.

We have had called to our attention an inquiry from a firm in Portland, Oregon (reached by MIDWEST ENGINEER) to a manufacturer in London, England, requesting information on a new product mentioned in our September issue. This is evidence of unusual geographical reach and pulling power.

As a reader of MIDWEST ENGINEER, you may be doing your organization a great service by calling the attention of your advertising manager to this high quality medium. Ask him to call or write us for space rates and reservations.

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